

THE MONIST

A QUARTERLY MAGAZINE

Devoted to the Philosophy of Science

Editor: DR. PAUL CARUS.

Associates: { E. C. HEGELER.
 { MARY CARUS.

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THE OPEN COURT

AN ILLUSTRATED MONTHLY MAGAZINE

Devoted to the Science of Religion, the Religion of Science, and the Extension of the Religious Parliament Idea

Editor: DR. PAUL CARUS.

Associates: { E. C. HEGELER
MARY CARUS.

An Unpartisan Organ of Religious, Ethical, Philosophical and Scientific Expression, Contributed to by the Leaders of Science in all Countries, and by the Leaders of Religion of all Denominations.

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THE MONIST

THE TRANSMISSION OF LIFE THROUGH THE UNIVERSE.*

ALREADY in their earliest reflections about the nature of organic life, men must have discovered, that every living being is once generated and after a longer or shorter lifetime dies. Somewhat later, but even this in a comparatively early stage, the empirical knowledge must have been reached that organisms of one species only produce organisms of the same species, or, as we say, "the species are stable." At this period, therefore, all the different species were believed to have left the hand of the Creator in their present form. This conception still conforms perhaps with the general, so to speak, orthodox opinion.

The doctrine has often been called the "Linnæan" because Linnæus in the fifth edition of his *Genera Plantarum* strictly adheres to the same: "Species tot sunt, quot diversas formas ab initio produxit Infinitum Ens, quæ deinde formæ secundum generationis inditas leges produxere plures, at sibi semper similes, ut species nunc nobis non sint plures quam fuerunt ab initio." In the sixth edition, however, Linnæus is evolutionist, as after the words "*diversas formas*" he has added "*et constantes*" and after "*produxere plures*" has replaced the rest of the sentence by "*sibi similes quam quæ fuere ab initio.*" Linnæus was followed by Lamarck and Oken, but Cuvier through his authority restored the old opinion and assumed that the species known

* Translated from the Swedish by J. E. Fries.

from earlier geological epochs but now extinct had been annihilated by some of nature's revolutions, whereupon new species were produced by new acts of creation.

A great change in the general conception, however, has quickly taken place during the last decades through the widespread study of the theory of evolution, especially after Darwin developed the same in his pioneer works.

According to this theory, the species in the course of time adapt themselves to exterior conditions, and by and by the alteration becomes so great that a new species may be said to have developed from the old. Lately this theory has been amended through the work of de Vries even so far that we now say that evolution occasionally takes a leap so that an old species directly produces a new. This is called the "theory of mutation."

Therefore we now assume that every organism that we observe has descended from other widely different beings, of which we find remains and traces in geological sediments deposited millions and millions of years ago. It might accordingly be possible that every creature endowed with life to-day has developed from one extremely simple organism, but it remains to demonstrate how this one has come into existence.

The prevailing opinion is probably the one already cherished by the ancients that the lowest organisms are generated without seed. It was observed how certain low creatures, maggots, etc., grow in decaying meat, as Ovid tells us in his *Bucolics*. This idea obtained until the seventeenth century but was then disproved by numerous experiments conducted by scientists such as Swammerdam and Leuwenhoek. But again this theory of spontaneous generation blazed into new life after the discovery of infusoria or the small organisms which appear in decoctions and infusions apparently out of lifeless matter. Spallanzani however proved (1777) that if the infusoria as well

as the vessel and the air enclosing the same were heated sufficiently to kill all germs then the infusoria became sterile, i. e., no more life developed. The method of preparing conserves is based on this discovery. Nevertheless the argument was brought up that the heat had so transformed the air as to make it unfit for the production of life. But even this last refuge was rendered impossible when Chevreul, Pasteur and Tyndall in the years 1860-1880 demonstrated that air from which all germs had been removed even through other means than heat, for instance by filtering, became unable to develop infusoria. Especially has Pasteur, whose methods of sterilizing are in daily use in the bacteriological laboratories, forced us to conclude that germs are necessary for the production of life.

In spite thereof, prominent scientists time and again come forward with pen in hand endeavoring to prove that we must assume the possibility of spontaneous generation. In these attempts they do not employ the exact methods of natural science but rather a philosophical mode of thinking. "Life," they tell us, "must once have come into existence, and we are therefore forced to the conclusion that spontaneous generation at some specific time has taken place although it does not occur under present conditions." Much attention was aroused when the great English physiologist Huxley believed himself to have found in some silt gathered from the bottom of the deep seas an albuminous body whose origin he called *Bathybius Haeckeli* in honor of the ardent German Darwinist Haeckel. For some time it was thought that this *Bathybius* (deep-organism) constituted the "primitive slime" of organic substance, the fulfilment of Oken's dreams, from which all organisms might be considered to have originated. Closer investigations, however, by the chemist Buchanan have demonstrated that this "primitive slime" consisted only of gypsum precipitated by the presence of spirits.

Some very fantastic explanations were now resorted to. It was said, for instance, that life possibly could originate from the inner glowing mass of the earth. At a high temperature perhaps organic compounds (cyanates and their derivatives) were formed which might be possessed of life. There seems, however, to be little reason for considering these speculations, before they have at least obtained some experimental foundation.

In this connection I cannot deny myself the pleasure of pointing out that at times external conditions may have been more favorable for the production of new species than they are at present. The famous physiologist Loeb in San Francisco has shown that the hybrid of holothurian and a starfish, which cannot develop in ordinary seawater, will come to life if a certain amount of carbonic acid is added to the solution. He therefore remarked that in geological epochs, when the air was highly carbonated as during periods of marked volcanic vivacity, hybrids may have come forth in vastly greater number than now. These hybrids may possibly have propagated, and this would account for the fact that certain geological eras are conspicuous for their magnificent production of new species while others, so to speak, appear to have been comparatively sterile. But the leap from hybrid to self-generation is far too great to make the discovery by Loeb an evidence of importance in favor of the theory that self-generation might have occurred during earlier geological epochs when the external conditions differed from the present.

We must therefore take sides with the great physicist Lord Kelvin when he passes judgment on this gospel in the following words: "A very ancient speculation, still clung to by many naturalists, supposes that under meteorological conditions very different from the present, dead matter may have run together or crystallized or fermented into 'germs of life' or 'organic cells' or 'protoplasm.' But

science brings a vast mass of conducive evidence against this hypothesis of spontaneous generation, as you have heard from my predecessor in the Presidential chair. Dead matter cannot become alive without coming under influence of matter previously alive. This seems to me as sure a teaching of science as the law of gravitation."

Although this last assertion may seem somewhat exaggerated it shows how necessary some investigators have found it to look for some other explanation of the problem. We have in fact another speculation in the so-called "Panspermy," a doctrine according to which germs of life are constantly moving about throughout space, meeting the planets and filling their surface with life as soon as the conditions for organic existence are fulfilled.

The origin of this idea may probably be dated long ago. Plain utterances in this direction were made (1821) by Sales-Cuyon de Montlivault in France, who assumed that germs from the moon brought into existence the first life on the surface of our earth. A German physician, Dr. H. E. Richter, offered (1865) panspermy as an amendment to Darwin's theory. Inspired by Flammarion's theory of numerous inhabited worlds, Richter asserts that seeds were brought to this earth from some other world that was in the life-bearing stage. He points out that carbon, which he holds to be of organic origin, has been found in meteorites, which, as is well known, have orbits similar to those of the comets. The organic origin of this carbon, however, is an hypothesis entirely unsupported by science, since meteoritic carbon never has shown trace of organic structure and carbon may as well be derived from inorganic matter; such for instance is found in the sun. More adventurous yet is his suggestion that organisms floating at great height in the atmosphere might be attracted by some passing meteorite and be carried out into space and transported to other celestial bodies. As a matter of fact

the surface of the meteorite is fused in its passage through the atmosphere and any germ that might possibly be attracted by it would necessarily be killed. And if, in spite of all, a meteorite should carry germ cells on its surface, these would inevitably be burned to ashes when it fell through the atmosphere of this or any other planet.

But on one point we must agree with Richter; there is perfect logic in his sentence: "The cosmic space embraces maturing, ripened and dying globes, where ripened stands for those that are ready to shelter living organisms. We therefore consider organic life in the universe to be eternal. It has existed in eternity, and has unceasingly propagated in the form of living organisms, cells or individuals composed of cells." As men formerly speculated over the origin of matter, but have given this up since experience has shown that matter is indestructible and only changes its form, and as we for analogous reasons never raise the question from where the energy of motion has come, similarly why should we not be able to familiarize ourselves with the idea that life is eternal and that therefore it is useless to search for its beginning.

The thoughts of Richter were accepted by the famous botanist Ferdinand Kohn in a popular lecture 1872. Perhaps the best-known of similar utterances is that of the great physicist Sir William Thomson, the late Lord Kelvin, who in his presidential address to the British Association in Edinburg, 1871, said:

"When two great masses come into collision in space, it is certain that a larger part of each is melted; but it seems also quite certain that in many cases a large quantity of debris must be shot forth in all directions, much of which may have suffered no greater violence than individual pieces of rock experience in a landslide or in blasting by gunpowder. Should this earth come into collision with another body comparable in dimensions to itself, at a time

when it is still clothed as at present with vegetation, many great and small fragments carrying germs and living plants and animals would undoubtedly be scattered through space. Hence and because we all confidently believe that there are at present, and have been from time immemorial, many worlds of life besides our own, we must regard it as probable in the highest degree that there are countless germ-bearing meteoric stones moving through space. If at the present instant no life existed upon this earth, it might lead to its becoming covered with vegetation. I am fully conscious of the many scientific objections which may be urged against this hypothesis, and I have already taxed your patience too severely to allow me to think of discussing any of them on the present occasion; all I can say is that I believe them all to be answerable."

Unfortunately, we cannot share in the optimism of Lord Kelvin on this point. To begin with it is doubtful if living organisms would survive the violent impact at the collision of two celestial bodies. We further know that the whole surface of a meteorite when falling upon the earth becomes heated to incandescence through friction against the air so that all adhering seeds must lose their power of germination. Plants grow almost exclusively in loose soil, and if a lump of earth were to fall through the atmosphere, it would undoubtedly, because of the resistance of the air, break into pieces each of which would become a shooting star and reach the earth only in the form of ashes. Another difficulty is that such collisions which we believe are indicated by the blazing up of new stars on the firmament are of exceedingly rare occurrence so that the chances are very small that living germs should be brought in this way to a certain spot such as our earth.

The whole theory, however, has entered into a far more favorable aspect with our growing knowledge of "radiation-force." Maxwell and Bartoli have calculated that

very small bodies of such size that they hardly become visible under our strongest microscopes are repelled by radiation, for instance, from the sun, so that this force may exceed the solar gravity. This theoretical conclusion has been verified through experiments by the Russian physicist Lebedew, and the American scientists Nichols and Hull.

The sun's radiation-force, according to calculations by the German Professor Schwarzschild, would show its influence best on bodies which if globe-shaped have a diameter of 0.16 micron. (One micron equals one thousandth part of one millimeter and is a unit frequently used in microscopy; the smallest visible particles have a diameter of about 0.2 μ .) The first question is: Do germs really exist of such infinitesimal size? To this the botanists answer that the spores of many bacteria measure 0.3 μ to 0.2 μ and that undoubtedly even smaller exist although we are unable to detect them under the microscope. Such no doubt cause rabies with dogs, the foot and mouth disease in cattle, and the mosaic plague on tobacco leaves, common in Indo-China and sometimes observed in Europe, and all sicknesses due to bacteria, but for which the corresponding bacilli have never been discovered, probably because of their minuteness and consequent invisibility under the microscope.

It is then most probable that living organisms exist so minute that the radiation-force of the sun would expel them out into space, where they might fecundate planets that offered them a favorable place for development. To begin with let us estimate what would happen if such a micro-organism, separated from the earth were driven out in space by the sun's radiation. Passing the orbits of Mars, the small planets, the outer planets and finally the last station in our solar system, the Neptune-orbit, it would start out in infinite space towards other solar systems. There is no difficulty in calculating the time required for

this journey by the swiftest of the small particles. Their specific weight may be considered as that of water which nearly corresponds to actuality; they will then reach the path of Mars inside of 3 weeks, that of Jupiter in 11 weeks and that of Neptune after 19 months. The nearest solar system, α Centauri, would be reached after 9000 years. (These calculations are based on the assumption that the radiation-force is four times greater than gravity at the sun, an approximate value according to Schwartzschild's calculations).

During the time required to reach any planet in our solar system, the germs of life certainly might retain their power of germination. Somewhat more disadvantageous are the conditions for the preservation of life during the passage to the nearest solar system. But we know that the suns are moving relatively to each other, so that the distance between them varies. We are able to figure out that during the course of one million years some star probably has been about five times as close to us as our nearest neighbor at present. When we estimate that life has inhabited the earth at least 100 million years, we must admit that it is of little importance if a planet should have to wait for the appearance of life a couple of millions of years after it has become ready to receive the same. In this way we reduce the time for the journey to the nearest star to 1800 years. One might doubt whether spores of bacteria or germs in general retain their latent life for such a period. It has been claimed that grains found in Egyptian sepulchres have shown capability of growth. But the sober critic has demonstrated that these statements are exceedingly questionable. Recently a French scientist, Boudin, stated that he had found spores of several kinds of bacteria in a Roman grave in Troussepoil (Vendee, France) which undoubtedly have retained their germinative power during 1800 years. This assertion, at any rate, does not seem un-

reasonable. Germs of bacteria, therefore, might possibly keep their life-bearing quality during the transportation from one planetary system to another.

On their way from our globe, the germs of life in question would be exposed to strong sunlight during about one month, and we know that the most refractable sunrays kill bacteria and their spores within a comparatively short time. As the experiments have been carried out however the spores have generally been placed on some moistened surface. (Marshall Ward's experiments.) These conditions by no means apply to spores moving in the interplanetary spaces. Furthermore, it has been shown by Roux, that the splenic fever spores, which are quickly killed by sunlight under free access of air are not affected at all in vacuum. Certain spores again suffer little if any harm from light. All the botanists that I have consulted on this point agree that there is no evidence to the end that spores traveling through space would necessarily be killed by sunlight.

It might further be argued that the spores, during by far the largest part of their journey are exposed to a cold that they might not endure. When the spores pass the orbit of Neptune, their temperature has gone down to -220° C. and still further out it is perhaps even lower. During some recent experiments at the Jenner Institute in London, spores of bacteria were kept for 20 hours at a temperature of -252° C. in liquid hydrogen gas. Their power of germination was not destroyed. Professor Macfayden in London went further still and showed that micro-organisms kept for six months at a temperature of -200° C. in liquid air still would germinate. At my latest visit in London, I was told that such trials had been protracted for even longer periods with the same result.

On the contrary, it is not improbable that the power of germination will last vastly longer at temperatures lower than those common on the earth. The loss of this power

is no doubt caused by some chemical process and nearly all such actions proceed enormously slower at lower than at higher temperatures. It seems, therefore, not unlikely that the extreme cold in the interstellar space preserves, so to speak, the germs of life so as to allow a far more protracted transportation than one might judge possible from their behavior at ordinary temperatures.

We see then that the spores of the smallest earthly organisms, if once separated from our globe, would quickly be dispersed throughout the universe as seeds are scattered over a field. But now the question arises: How will they be able to leave the earth against the force of gravity? Of course such tiny and light bodies would follow the currents of air. A small particle of rain, one-fiftieth part of a millimeter in diameter falls four centimeters per second at ordinary atmospheric pressure. Hence it is easily calculated that a spore of bacteria 0.16 micron in diameter would fall only 83 meters in one year. Evidently such small particles follow the currents in the atmosphere even out into the most rarified air. By a current of two meters velocity per second they would be carried to a height where the barometer would show only 0.001 millimeter, or a height of about 100 kilometers. But by the currents in the air they could never be expelled out of the atmosphere.

In order to lift them to greater heights, we must resort to other forces and fortunately we know that electricity will help us out of almost any difficulty. On such great heights as 100 kilometers the northern lights display their resplendent radiance. We believe nowadays that the northern lights are caused by discharges from negative electricity brought with great quantities of dust from the sun. The atmosphere is there as if saturated with negative electricity. If therefore the spore in question receives a negative charge from the sundust, it might by its charged neighbor be driven out into the ether sea.

We assume now that electrical charge as well as matter is not divisible *in infinitum*, but that there exists a minimum charge which has been determined to be 5×10^{-10} electrostatic units.

It is not difficult to calculate how strong the electrical field must be that will expel such a charged spore against the force of gravity. A field of 150 volts per meter will suffice for this purpose. Fields of this strength are often, almost normally, observed at the surface of the earth in clear air. The electrical field in the region of the northern lights is in all probability much stronger, and is therefore no doubt able to expel the electrically charged spores when they are carried to this region by currents of air.

It is therefore probable that seeds of the lowest organisms we know are continually being scattered out in space from the earth and from other planets inhabited by life. But like germs in general, by far the greater portion of these will perish in the cold infinite space, a small number, however, may fall on other spheres to bestow upon them, if their conditions are favorable, the gift of life. Sometimes this may not be the case; sometimes again the seeds will meet an eager soil. And even if a few millions of years should elapse from the time when a planet is ready to receive life until the day when the first seed reaches its soil, sprouts, and takes it into possession for the use of organic life, how insignificant is this delay compared with the era during which life will blossom on the planet.

The tiny seeds expelled in this way from the homes of their parents may either travel isolated through space and, as outlined above, reach outer planets or systems of planets centered around other stars, or they might meet bigger particles rushing in towards the sun. In that part of the zodiacal light which is called in German *Gegenschein* and is regularly observed in the tropics and occasionally at our latitude in the part of the sky opposite the sun, we behold,

according to the astronomers, streams of fine dust swiftly falling into the sun as gravity commands. Suppose now that a spore 0.16 micron in diameter meets such a dust particle 1000 times greater, that is 1.6 micron in diameter, and adheres to its surface, then the spore will be carried in towards the sun, thereby crossing the orbits of the inner planets, and might fall into their atmosphere. It does not take these dust particles a long time to pass from one planetary orbit to another. Assuming their initial velocity zero at Neptune (they might then originate from one of Neptune's moons, as Neptune, Uranus, Saturn and Jupiter themselves probably as yet have not cooled off sufficiently to shelter life) they would reach Uranus's orbit in 21 and that of Mercury in 29 years. Under similar conditions, such particles would cover the distance between the orbits of Uranus and Saturn in 12 years, between Saturn and Jupiter in 4 years, between Jupiter and Mars in 2 years, between Mars and the earth in 84 days, between the earth and Venus in 40 days and between Venus and Mercury in 28 days.

It becomes evident from these figures that the dust particles with their adherent spores might fall 10 to 20 times slower without danger of the spores losing their germinating power. In other words, if the spores adhere to particles so tiny that their weight to 90 or 95% were balanced by the sun's radiation force, they might yet within a comparatively short time fall into the atmosphere of the inner planets but with a reasonable velocity, of say a few kilometers per second. It is easy to calculate that if such a particle were brought to a standstill in one second, its rise in temperature would only amount to 100° C. above that of the surrounding air because of the strong radiation. Such temperatures the spores of bacteria easily endure for even much longer periods than a second without jeopardizing their life. Once arrested the particle with its ad-

hering germ and with or without the help of air currents would slowly sink to the surface of the new planet.

In this way life would quickly be dispersed from its home within a planetary system to other places in the same system offering favorable conditions for its existence.

Some of the germs which were not caught by such dust particles would continue their journey towards other solar systems, where they would be arrested by the radiation force from the new suns. They cannot go further than to a point where the opposing radiation pressure equals that at their starting point. Consequently germs from the earth which lies five times nearer our sun than Jupiter would approach another sun to a point five times nearer that sun than germs from Jupiter would.

In the neighborhood of the suns, where the germs stop on account of the radiation pressure and return to the inter solar spaces, there will necessarily occur a great accumulation of such seeds. The planets gravitating around these suns have better chances, then, to meet them here than if they were scattered somewhere else in space. The germs have also lost the great velocities with which they traversed the intersolar distances, and they will therefore not be heated up by falling into a planet's atmosphere to such an extent as otherwise would be the case.

In this neighborhood of the suns, we must also find a concentration of the above mentioned dust particles of a weight a little less than counter-balanced by the radiation-pressure and therefore moving towards the sun. There are comparatively good chances then that the germs here will be attracted to such particles and therefore hindered from returning to space and instead brought in towards planets nearer the suns.

In this way life may have been transplanted since eternity from solar system to solar system and from planet to planet within the same system. But as the billions of pollen

atoms that the winds will scatter in all directions from a large tree like a pine, for instance, on an average give life only to one new tree, so probably only one out of billions or perhaps trillions of germs that are dispersed from a planet by the radiation force throughout the universe, will fall on a planet not yet inhabited by life and there give birth to an infinite number of living organisms.

Finally we find according to this version of the theory of panspermy that all living beings in the universe are kindred and consist of cells built up mainly of carbon, hydrogen, oxygen and nitrogen. The fancied existence then of other worlds inhabited by beings in the organisms of which the carbon for instance is substituted by silicon or titanium seems rather dubious. Life on other inhabited worlds is probably evolving in forms very similar to those on the earth.

Further we draw the conclusion that life always has to commence from its lowest forms just as every individual, however highly developed he may be, must pass all stages of evolution, from the first simple cell.

All these conclusions harmonize beautifully with the general characteristics of life on the earth, and it cannot be denied that this form of the doctrine of panspermy possesses that degree of coherence which is the best criterion for the probability of a cosmogonic hypothesis.

There are very small chances for a demonstration of this theory through observation of the germs falling down through the atmosphere. The number of germs arriving on the earth each year, is probably extremely small. In addition, they are no doubt very similar to those of earthly origin which the winds carry in enormous quantities, and therefore, even if they should be found by scientists, their "celestial" birth would be difficult to prove.

S. ARRHENIUS.

UNIVERSITY OF STOCKHOLM, SWEDEN.

THE EVOLUTION OF LIFE OR NATURAL SELECTION IN INORGANIC MATTER.

NOT once nor twice but many times indeed is it that the great question has been raised What life is and how it has arisen. Seldom before has it been so much before the minds of men. This strange power that pervades certain forms of matter; animates, moves, grows, reproduces itself and dies; this ever changing, never ending cycle of events; the phenomenon we call life. What is it? Not one of us can say. If we give a hint that we have tried to solve the problem, people think that we mean we have also accomplished its solution.

But the great problem, though presented in a new light, still leaves us where we were: asking indeed once more; whence have we all come and whither are we all going? It is the question of all questions which ever present themselves to thinking minds. To Carlyle indeed, it was the one great question of his life, ever present to him, as really and as intensely as the Divine presence was to such a man as Newman. This faculty of perception is regarded as the striking feature that elevates the leaders of men at all times and in all places, to the plane of something higher than the common level. Commonplace folk feel it dimly but seldom attain to it. Now not even commonplace men, but men of science generally, think little of it. They merely look at phenomena and move straight on. It does not concern the majority; nor even the majority of

the minority, who may devote themselves to intellectual pursuits.

Biologists, chemists, physicists, nay even the positive philosophers like Comte, refuse to think of it. It is too distant, too remote a question to concern us in the affairs of every-day life. We may pass through it heedless of its meaning; we may move on adjusting ourselves to that environment alone which has been laid out for us; acquaint ourselves with every detail in the particular sphere or department in which by chance we have been placed; and like passengers from Euston to Holyhead, provided we are not molested in our own compartment, ask no questions till we get to the other end. This is the duty of the individual: it is clearly also that of a tram horse. Though it may add to the efficiency of both it speaks volumes for the absence of intelligence in either. The man who ignores it may be happy and contented. The man who does not may be happy or unhappy as the case may be, but he is never commonplace or dull. He finds in life a real purpose: in his every act a real meaning. Such an one, view him as we may, lives on a higher plane, than the man in Cornhill or Piccadilly may attain to; he is a philosopher and in a truer sense a man. He has an acquaintance with the higher meaning of his "sojourn in this strange land," and he places himself in the position of one who has much to hope for, and may aspire to something better.

Now this problem of life can be presented in many ways. It can be confined within the narrow limits of pure science, or it may expand into the great problem of reality in which alone its true meaning can be found. It admits of no interpretation if we view it from a single point of view alone.

It will be found well to distinguish between the scientific and the philosophic attitudes, and yet at the same time

to bear in mind that neither will or can afford a true solution without the other.

Let us for the present however put to one side the deeper and more difficult question which philosophy presents; and let us ask ourselves, what is it that science has to tell us? The most it can do is to show us that there is, or has been, a development, gradual or spontaneous, of living from apparently not living matter. It can give us in the present state of knowledge no clue as to its real nature nor as to its real origin. For even if such development were established as a fact,—and science does not claim that it has been so established, it would only tend to strengthen our belief in the process of evolution; and lead us to infer that there are vital processes in the apparently inert types of inorganic matter. The theory which it has been my endeavor for some time past to put forward is that there is in this so-called dead, inert, inactive, inorganic matter a process not unlike that of natural selection or survival of the best adapted types, which in the long run find their level in the adjustment or evolution of inorganic as well as of organic matter. There are various types of inorganic matter; call them species of matter if we will. The doctrine of the origin of species can apply equally to these as the means of sifting out the potential types which are best suited to their environment. It is in truth the "law of higgledy-piggledy," as Adam Sedgwick, the geologist, described the theory of Darwin.

Living matter, as we know it, is but a species of matter which has been sifted out as the fittest to survive. In the infinite gradation from the most complex to the most simple we may perceive the same process in an ever simplifying degree. The fact of self-reproduction was an accident, and a happy accident in a particular type.

As we propose to show, Weismann's *determinants*, and *biophores* are well within the limits of molecular dimen-

sions; a circumstance which leads us, apart from other considerations, to deduce that the atoms and molecules of the chemist and physicist are of the nature of living things. In the *Origin of Life* I have tried to emphasize this idea; that atoms and molecules have only a family likeness, so to speak, and that they can be said to be the same only in so far as their physical and chemical properties are concerned, but that as vital units they may differ considerably.

Indeed the chemist has no more reason to suppose that the atoms of oxygen are the same in all respects, than the zoologists would have that all horses, all dogs, or all cats are the same. The atoms of oxygen are all like each other in so far as they have the same physical and chemical properties. But they may differ from each other in other respects; just as all horses, all dogs or all cats resemble each other in certain respects and yet differ in others. Biophores are the smallest vital units that the biologist has hitherto assumed. They are invisible and, from what appears, of molecular dimensions. They are the germ plasm in the nucleus of the cell, possessed of a great variety of properties but at the most composed of but a small number of atoms and molecules.

In order therefore that the great variety of properties which they doubtless do possess may be explained, it seems necessary to attribute to inorganic matter some of the properties which they exhibit. And that by a slow process of evolution those which had the vital properties most marked, combined to form more complex aggregates, by a mere process of natural selection.

It is curious that this theory has never been put forward, at least to my own knowledge, by any biologist, but it seems not unlikely that the reason is, biologists have not realized how closely biology and physics have approached; or indeed in some respects have already overlapped.

Molecular physics will doubtless yet become a branch

of biology; and these vital properties of atoms will require investigation as much as those of grosser objects which the eye can see, if only with the most powerful microscopes. The limits of visibility have nothing whatsoever to do with the limits of vitality; and the fundamental problems of biology, like those of physics and chemistry, are necessarily relegated to the invisible, but not relegated there because beyond the limits of speculation or experiment. "Formidable though the evidence for organic evolution be, and finally though the belief in it has been established by the work of the past half century, it would be idle to deny that there is yet difficulty enough in explaining many of the facts of animal and vegetable life."*

This difficulty is to be met with, I think, not merely in explaining so complex an organ as the eye by natural selection; but in explaining also how the germ plasm from which this complex organ was evolved, could consist of only a comparatively small number of molecules. The biophores, therefore, are really nothing more than big molecules or aggregates of molecules. And I am loth to think it idle to ignore that it is in the atoms and molecules of gross matter that we should seek the simpler processes of vitality and the potential properties of life.

Eminent authorities there are, even at the present day, who maintain that natural selection in organic evolution alone cannot account for the mental and moral qualities of man. Nor do I think it really can. The properties of the most complex kind should be traced to the potential qualities of inert matter, to the attributes of the atom itself; or even to those of which the atom is composed, the electron. Although this is the smallest that physical science has yet reached, there is no reason whatsoever to suppose that it is the limit; nay, rather is it most likely that the electron in turn is a highly complex structure, forsooth a

* *Organic Evolution* by Dr. C. W. Saleeby.

universe in itself, differing from ours only in its order of magnitude. And so on *ad infinitum*. There indeed lies some of the real mystery of the varied attributes of life. In that indefinite, innumerable variety of minor combination, of which atoms in their ultimate nature really admit, is to be found, I think, the source and quality of our being.

There is in matter, I conceive, a power, if we may call it so, which under given conditions would enable it to spring forth into the activity of life. One atom out of millions may possess the property in a sufficiently marked degree to give rise in combination with another such atom or atoms of other substances, to the attributes of more developed life, until by some strange admixture out of countless failures the life we recognize as life to-day becomes at length supreme.

Students of Leibnitz will bear in mind how admirably his theory of monads may be made to fit in with this conception. Leibnitz regarded the atoms as mere points without extension in space; but endowed with the properties of mind. Monads differing in the degree or intensity of this consciousness: from the consciousness of a man, a dog, a fish, a plant, down to that of an atom. Our point is that there has been natural selection amongst these monads or atoms; and that the more complex forms of consciousness have been evolved by this same principle. These monads which have not so developed, constitute the vast majority of the failures of inorganic matter.

How is it, one may ask, that we have never seen such development take place? How is it, it may be replied, that we cannot see the evolution of man from lower forms? The theory of natural selection as applied to this monadology is, I believe, the one fittest to survive; to survive not alone because of its scientific value, which seems to me to be unquestionable, but because also of the way in which it

bridges over the gulf between living and apparently dead substance, as well as that between matter and mind.

Let us turn our attention then to this doctrine of monads and examine what it means. It is not a theory of *life-stuff* and *mind-stuff* as ordinarily understood, but of natural selection in the elements of that stuff itself. Clifford's theory of *mind-stuff* that all matter possesses a dim elementary type of consciousness, and that all higher forms of consciousness are merely complex combinations of these; must not be confused with Leibnitz's theory of monads, the units of which differ in their degree or intensity of consciousness, from the soul of man down to that of an atom. It has an advantage over that of Clifford's, because it gives the soul a chance and may account for the unifying principle in consciousness, which is the great objection to the former. Our theory then is that there has been evolution amongst these monads by a principle of natural selection, and that the human soul is merely an atom, a pointless atom if one may put it so, that has caught on and is able to regulate a host of others in the organism: much as a general can regulate an army or a captain navigate a ship.

This pointless conscious atom or monad, as it has been called, is as much matter as the ordinary atom of oxygen. It differs in degree from it as the soul of a Newton or a Shakespeare may differ from that of a Kaffir or a fool. But still the difference is only a matter of degree. There is no essential difference in substance and the two are ultimately of the same kind of being. It is handed on from generation to generation as biogen in germ plasm. It is here indeed, we find the doctrine of evolution lends a helping hand to the problem of the origin of life and of mind. It brings us also within reach of the physical nature of the biophores of Weismann and the gametes of Mendel, into which the great questions of heredity resolve.

It would be well then in considering the evolution of monads to clear our minds as to what biophores are and what gametes are, and how it can be shown to bear upon the theory of monads as we conceive it. What also are enantomorphs, biogen and bions?

We may begin by stating that the cell or unit of life recognized as such by the biologist to-day, consists of a nucleated mass of protoplasm; that is to say that it is a mere protoplasmic substance with a nucleus, and it may be added that there is a smaller speck near the nucleus called the centrosome, but it does not so much concern our present purpose. The centrosome may play a part in bringing about the *karyokinesis* or subdivision of the nucleus.

The latter consisting as it does of *chromotin* or stainable substance, of the nucleus, is made up of finer structures called the *chromosomes* which subdivide. Now Weismann assumes that these are made up of smaller invisible particles which he calls *determinants*, and these in turn of still smaller ones called biophores, the real germ plasm to which heredity is due. Objection has been taken to this assumption, but it seems nevertheless to be well founded. It is most likely that there is a series of nuclei one within the other, till we get to the molecules, atoms and electrons. As it is the nuclei in some cases are just within the limits of visibility; the determinants therefore are within the dimension of the wavelength of light, whilst the biophores approximate to that of molecules; they are therefore nothing more than big molecular groups.

Gametes are supposed to be the units by which according to Mendel hereditary qualities are handed down from generation to generation. Their presence constitutes indeed the principle on which our present theories of heredity are chiefly based.

In the *Origin of Life* we have regarded these gametes

and biophores as the n^{th} or ultimate nuclei and as units of the substance biogen. These units are supposed to be like the chemical elements, but of a less stable kind, consisting, in the astronomical analogue, of spiral nebulae rather than solar systems.* The spiral nature of these biological atoms is what gives them their optical asymmetry. A point of considerable importance because life is never found apart from optical activity. These optically active atoms are called *enantiomorphs*. It must be noted however that in order that such atomic nebulae should be possible it is necessary that the electrons of which the atoms are composed should in their turn be aggregates of smaller things, we have ventured to designate them *bions*. And so on *ad infinitum, ad infinitum*. We must never hope to reach the end in one scale of being any more than in the other. As Pascal has well said, "our being in space is a gulf between two infinities, as it is in time between two eternities." If there is nothing good or bad, and we may add true or false, neither is there anything great or small, but thinking makes it so. Our nature is a middle nature and our knowledge of nature merely relative. To dwell upon it is to expand our knowledge to two infinities, the infinitely great and the infinitely small.† This is merely physics; to go beyond it would be metaphysics, and metaphysics of a transcendental type.‡ We need go no further then, but rest content with that middle nature in which we have been placed. To seek the properties of life and matter and of mind and soul in that great scale of infinite gradations is legitimate indeed; to perceive the harmony of it all is both scientific and philosophic. We may ask once more then in this light of things, what life is and whence it has come. And our answer is that in its ultimate form it most probably

* See my paper on "Physics and Biology," *Knowledge*, March and April, 1907.

† *Knowledge, loc cit.*

‡ See "Haeckel and Haeckelism," *Oxford and Cambridge Review*, 1907.

always has been and always will be. The monads in their ultimate aspect are not necessarily chemical atoms nor even electrons, but in the limit the pointless units of which these are ultimately composed. The formation of cells in protoplasmic substance is the result of some such interaction, illustrated for instance by the action of radium and other salts on bouillon. These cells are not alive in the familiar sense of the word. In fact they do not show more than the rudiments of vitality, when the word is used in its more extended sense; but they help to illustrate the manner in which cellular bodies may be formed from protoplasmic substance: whilst given the dead protoplasm—which has not yet been synthesized in the laboratory, though there is little reason to suppose it will not be—and given also the vital units, not radium in this case but the vital substance itself biogen, the spontaneous appearance of organic life is conceivable on the lines worked out in the *Origin of Life*. That book has been criticized from many points of view. It is not my intention to dwell here upon those varied criticisms, most of which are really answered by anticipation in the book itself. Upon some future occasion it may be possible for me to enter fully into a discussion of those remarks. For the present my object is indeed to show the line of argument it was my desire to follow. To show on the one hand that metabolism is everywhere present; and on the other that it can be controlled by certain types of inorganic bodies; but most of all by the vital units which form the basis of all life.

Professor Windle, amongst others, objects that we are merely explaining one phenomenon by another, by something not less easy to comprehend. It may or may not be less easy, but it is at any rate a phenomenon of a simpler kind. And all science can ever hope to do is to reduce the complex to the simpler. The recognition of this ever simplifying scale, infinite as it may be, is perhaps not the least

striking feature in the explanation of nature. It is not like putting an elephant upon a tortoise, and leaving the tortoise to stand upon an elephant, for we put the tortoise upon something simpler than the elephant or itself. The ultimate basis is lost in the series, but the recognition of the series, or of the chain connecting the separate links, is as scientific a procedure, as a scientific procedure can be.

It may be said no doubt that the evidence does not prove conclusively that the view we take of the existence of these smaller units is correct. This may be true; we only claim that the facts have led us to postulate this, not merely as a working hypothesis, but even as the most probable solution.

To Herbert Spencer the recognition of this endless chain which loses itself in infinity, or the *unknowable*, as he unwisely called it, was a necessary postulate or axiom. It only required to be stated that it might be perceived as true.

His whole system of philosophy rested upon that idea; fabric in mid-air as it may seem to be, it represents what appears to be the most scientific and philosophic aspect of Nature.

But Spencer nevertheless did not enter into the question from exactly the same point of view. The theory of natural selection in inorganic matter, nor the applicability of monadology to it, does not appear to have entered his mind. The idea of *physiological units* elements of *life stuff* is however due to him. Our system is an attempt to show that materialism as understood now-a-days and idealism as understood by Leibnitz, though perhaps in a slightly modified form, are not merely not incompatible with one another, but that viewed from a higher standpoint polymism and monism are but different aspects of the same thing; for unity and plurality are everywhere conditions of reality.

The more closely we examine the nature of continuity the more clearly does it appear that it is everywhere of the nature of a plurality but that in the limit, in order that there should be such a thing as continuity, there is unity. This is illustrated in the case of space and time; it is also manifest in the case of motion and indeed in all instances of continuity in nature.

Now it is not always recognized in dealing with small physical quantities; for the physicist generally thinks of the smallest unit he has obtained, the electron, as the smallest in creation.

To my mind the idea seems, I shall not say absurd, but certainly narrow, and to put a limitation to what obviously has none. The assumption that we have realized the limit of smallness in the limits of experimental methods is certainly absurd. It must not however for a moment be supposed that we are thus rejecting the atomic constitution of nature; but merely emphasizing that atoms are merely lumps of smaller things, these may be elements of the ether, it matters not what, but doubtless in their turn aggregates of something else much smaller still, *ad infinitum*.

Here it will no doubt be pointed out that the principle of continuity when applied in this way is equivalent to the ancient maxim that *nature abhors a vacuum*. That is no doubt true. It all depends upon what is meant by a vacuum. The ancients did not mean the absence of chemical atoms, for they knew nothing about them; but the absence of all or any substance whatever. It is here I think those who have thought out the matter will find that the principle of continuity of substance as worked out by Leibnitz still holds good.

That great philosopher, mathematician, statesman and man of the world saw things in a true light. His perspective was not distorted by the refracting air of academic life. He lived in a purer and nobler atmosphere: indeed

some said he lived in an intellectual balloon, so wide was his view of the world. His knowledge was so varied, his correspondence with the learned in every land so great that he was said to be an academy in himself. There was some truth in the statement. He stood alone and yet worked in harmony with the world. Everywhere he left the impression of intellect and character, which as some of his contemporaries found to their discredit, would stand the test of time.

When we come to consider his theory of monads, we may apply to them the principle of natural selection, or the process of sifting out the best adapted types, instead of assuming the principle of pre-established harmony which he accepts because the theory of evolution would doubtless have been foreign to his mind.

Now in the light of these considerations, evolution on Darwinian lines, in inorganic matter, is as much a necessary fact as that in the organic. In truth, life exists as much in one as in the other and the difference is only a question of degree.

The anatomist and physiologist no doubt maintain that the properties we ascribe to monads are merely in the phronetal cells in the cortex of the brain; the *phronema* supposed to be the organ of thought. But this really does not affect the question. Not more so indeed than that the eye is the organ of vision, the ear the organ of hearing, or the nose the organ of smell. These bear the same relation to the conscious unit which we call the soul, that, to take an old analogy, a piano does to the player. The analogy is as good as it is ancient. When the mechanism of the piano is destroyed, or the ear injured, there is no further music, and though consciousness and its potential properties are there, they do not combine to produce the beautiful combinations of thought through the instrument of the piano and the brain. This is old, very old, but I

think not on that account less true; and it is the view now held by some of the most eminent psychologists, notably by Mr. William James.

The extraordinary innate qualities in the embryonic cell are as I think beyond all doubt clear to infra-molecular arrangements. It is for this amongst other reasons that I have applied the doctrine of natural selection to atoms. But it was more so on account of the psychological developments that I have found it still more imperative to assume the elements of mind in the ultimate nuclei; the monads of our being which constitute ourselves.

I have in making that assumption formulated the attributes which tend to separate, as by a gulf, the phenomena of mind and matter. I have tried to impress once more the monism of that apparent dualism. To emphasize, for it needed emphasis, that mind is matter and matter mind. But for all that, the mystery of both still remains where it was, the inconceivable, impenetrable, source and nucleus of our being, which lies hidden for ever from us. I can find in that remote immutable and distant origin which loses itself in infinity of space as well as of time the only origin not merely of life but of mind. And I therefore ask you to find in it, insoluble though it may be, the key to the only true solution. Let us pause and think awhile of what it all means.

It is the most consistent theory of germ plasm, the substance which contains the elements of consciousness as well as of vitality. It gives to psychology what belonged to physics, and to biology what once belonged to both. It attributes to matter the consciousness which we have always ascribed to mind; and it destroys matter because it shows everything is mind. But it brings biology within the realm of physics, or physics within the realm of biology: and therein, perhaps, does its scientific value mainly rest. It gives to molecular physics a new aspect

for it implies and even demands that atoms and molecules are thinking and alive. It is not so fantastic as to be unfounded, nor so far-fetched as to be without use. In a word, it enables us to see the unity and plurality of nature as one consistent and harmonious whole.

In the doctrine of organic evolution there is much that lies unexplained; partly because biologists have confined themselves to biology, physicists to physics and psychologists to psychology. With us the special ground has been the disputed territory between them. In science and philosophy we need no Venezuelan arbitrators to decide on the dividing lines between these grounds of knowledge. In days I hope now gone by, though even in that case not so very long ago, the narrow provinces of each branch of knowledge have been zealously if not jealously guarded by each of the professors in his own department. These have long been supposed to stand apart like so many separate houses, or if we will, so many water-tight compartments. The less leakage there was, the less communication between the separate compartments; the more they stood apart, the less they saw of each other; the less they knew of each other's work, the better it was held to be, for themselves as well as others. But that remote egotism, that isolation could not last for ever. As work advances the question must arise, whose territory is this and whose is that? That which I am trespassing, is it yours or mine? Though no traveler may have passed through it and left his country's flag, the question must be answered to the satisfaction of one or the other, or of both. If in this adventurous quest, beyond the narrow limits of our own recognized ground, we have found aught that was new or stimulating, we can only say that we hope it will be conceded to be within the scope of more sciences than one. We can only hope that if there is diversity so also let there be unity.

The theory of evolution requires to be viewed from more aspects than one. And in so doing it can be perceived to be the one principle that regulates the development of mind as well as that of matter.

Those difficulties in organic evolution thus seem to imply evolution in inorganic matter, what I might now call mind stuff—and to be surmounted by it. Inert matter has in truth more life than has yet been ascribed to it. It is by a process of sifting out, or in other words by natural selection, that life as we know it and mind as we know it have been evolved. The evolution is in the assortment of monads. The integration and disintegration are from the simple to the many and from the many to the simple. The tendency throughout nature is towards harmony, but there does not appear to have been pre-established harmony as Leibnitz has supposed. Nay, rather everything seems to have been “higgledy-piggledy” and to be gradually settling down. Where there is harmony amongst monads there is good; where there is discord there is evil. The evolution of monads is on the whole towards harmony, and the purpose of the universe towards good; whilst their struggle for supremacy in their ultimate form constitutes the origin not only of life as we know it, but perhaps of evil as we know it too. And with the poet of Buddhism may even the rude believer in materialism exclaim:

“Behold, I show you Truth! Lower than hell,
Higher than heaven, outside the utmost stars,
Further than Brahm doth dwell,
Before beginning and without end
As space eternal and as surety sure,
Is fixed a Power divine which moves to good
Only its laws endure.”

JOHN BUTLER BURKE.

LONDON, England.

LIFE AND THE SOUL.

BIOLOGISTS are agreed that the basic problem of their science is not yet mature for solution. The origin of life is a mystery still shrouded in darkness by a lack of the necessary data which would throw light on the most primitive conditions of life. But while as yet the details of the problem have resisted scientific inquiry, the problem itself, or let me say the philosophical background of the problem, is by no means so hopeless as is commonly assumed. We know enough of life to anticipate the nature of the explanation of its riddles, and there is not the slightest reason to regard the problem as an unfathomable mystery, an enigma that under all circumstances would defy comprehension.

The problem of the origin of life has been classed by Du Bois-Reymond among the seven enigmas of the world¹ and, not without a touch of a love of mysticism, he actually deems the nature of life to be intrinsically unknowable.

In the same way Mr. Spencer and his followers look upon the problem of life as unsolvable, but in both cases we have to deal with a certain philosophical dogmatism which has no foundation. There is a great difference between the unsolvability of a problem on account of subjective and of objective reasons. It is our fault if we do not know enough, and the fault can be remedied. The lacking data can be supplied. But if the obscurity of the

¹ *Die sieben Welträtsel.*

subject were inherent in the facts themselves, no amount of science or inquiry would avail.

We doubt whether we have a right to regard as genuine and legitimate those problems which are *per se* unsolvable, and prefer to characterize them either as illegitimate or futile problems.² Illegitimate problems are wrong formulations, and futile problems are those that ought to be formulated as statements of fact.³ For instance the ontological problem "why is reality real?" or "why does existence exist?" ought to be rendered "what do we understand by reality?" The question of the origin of life is one of the most difficult problems with which science is confronted, and there is little hope of solving it at present on account of its detailed complications. Yet, while we recognize the practical difficulties under present conditions with the means at our command, we deem the problem by no means unsolvable or beyond the grasp of man's reason.

The philosophical problem of the origin of life does not investigate the field of physiological details but limits its inquiry to the main outlines of a solution. It attempts to bring clearness into the chaos of riddles by pointing out the direction in which the answer of the main question must be sought. Above all we must learn to distinguish between two factors, (1) the indispensable elements from which life rises, and (2) the conditions which actually cause it to appear. The former must be assumed to be immanent qualities of existence, the latter come to pass by a favorable combination of circumstances.

THE NEW VITALISM.

It may be considered as an established fact that life is a function, not an entity nor a substance. The idea that

² Comp. *Fundamental Problems*, p. 283 ff.

³ Comp. *Kant and Spencer*, p. 52.

it might be an entity has long been given up, yet the theory that it requires a special life-substance different from other material is still ventilated now and then. This theory is called vitalism and it is too natural an error to be abandoned entirely without at least making the attempt to adapt it to our modern knowledge.

Vitalism in its cruder or primitive form has been surrendered but it is established in a new sense by Bunge, a prominent Swiss biologist. He claims that life is an energy which is as distinct from all other energies as electricity is different from motion or heat, and it seems to us that in this he is right. Sometimes naturalists are carried too far by their enthusiastic zeal to unify all the phenomena of nature and classify them under one head (which in itself is quite legitimate) and insist upon identifying things which are different. The process of life is certainly sufficiently different from other kinds of energy to be regarded as a type of its own. We need not for that reason declare that it is a supernatural phenomenon, or even that it is *per se* mysterious, but we may very well bear in mind that it is a phenomenon *sui generis* which can not be identified either with mechanical motion nor with chemical activity nor electrical phenomena. It is a more complicated process than these three and produces effects which can not be traced in any of the others, and so in my opinion we are perfectly justified in saying that vitality or the function of life is a kind of energy of its own. In this sense we may retain the old idea of vitalism in a modernized form, and classify life by itself.

The conditions of life constitute a department of their own; they are not purely mechanical, nor purely chemical, nor purely electrical. Some processes are mechanical, e. g., the movement of the bones; others are chemical, e. g., the modifications of food stuffs under the influence of saliva; and that electrical phenomena accompany vital

processes has been proved first by Du Bois-Reymond and lately again by Augustus Waller. Yet the properly vital processes are more complicated than any physical phenomena and accomplish things which are impossible by means of organic chemistry. The vitality of living organisms is not a peculiar substance, but a new complication of processes which justifies us in attributing to it a domain of its own which is pretty well marked off from the rest of nature.

The new vitalism, at least as we understand it, must not be interpreted as an attempt at reestablishing dualism, for life remains a natural phenomenon as much as other forms of energy, be it the lightning in the sky, or the falling stone, or the wonderful display of colors in a reflected beam of light. We would say then that the function of life is a manifestation of energy which forms a category of its own. It is as different from physical processes as chemical combinations are different from purely mechanical movements,—or even more so.

METABOLISM.

Living bodies consist of the very same materials of which the rest of the world is composed. Chemistry has resolved matter into some seventy chemical elements, and the elements of organic chemistry are absolutely the same as those of inorganic chemistry. Some of the most unstable and lightest elements play the most important part in the function of life, for we may say that oxygen, hydrogen, nitrogen and carbon are the most essential factors in building up living organisms.

Our own bodies are composed of a certain number of chemical elements, a part of which is being constantly spent, and the sustenance of life depends upon an uninterrupted supply of new material which is furnished partly in the shape of food and partly through breathing.

The constant change of matter that constitutes the vital process is called metabolism, although the German word *Stoffwechsel* is much more expressive than the Greek term. Metabolism exhibits two phases, first the building up of life structures, which is called anabolism, and then their partial break-down, which is called katabolism. Anabolism is accomplished by nutrition which is a transformation and assimilation of food; its result is a storage of energy. Katabolism is produced by spending the energy which is followed by a state of fatigue, i. e., an exhaustion which requires the restoration of the impaired structure.

So far as I know, the best investigations on this subject have been made by Prof. Ewald Hering of Leipsic, who is mainly concerned with the physiology of vision, but his theory has a general application, and our present purpose will be best served by quoting a recapitulation of his work from the *Encyclopaedia Britannica*, s. v. "Physiology," Vol. XIX, p. 22.

"If the ingenious speculations of Hering, that specific color-sensations are due to the relation of assimilation (anabolism) to dissimilation (katabolism) of protoplasmic visual substances in the retina or in the brain, should finally pass from the condition of speculation to that of demonstrated truth, we should be brought face to face with the fact that the mere act of building up or the mere act of breaking down affects the condition of protoplasm in other ways than the one which we have hitherto considered, viz., that the building up provides energy to be set free and the breaking down lets the energy forth. In Hering's conception the mere condition of the protoplasm, whether it is largely built up or largely broken down, produces effects which result in a particular state of consciousness. Now, whatever views we may take of consciousness, we must suppose that an affection of consciousness is dependent on a change in some material. But in the case of color-sensa-

tions that material cannot be the visual substance itself, but some other substance. That is to say, according to Hering's views, the mere condition of the visual substance as distinct from a change in that condition determines the changes in the other substance which is the basis of consciousness. So that, if Hering's conception be a true one (and the arguments in favor of it, if not wholly conclusive, are at least serious), we are led to entertain the idea that, in addition to the rough propagation of explosive decompositions, there are continually passing from protoplasm to protoplasm delicate touches compared with which the nervous impulses which with such difficulty the galvanometer makes known to us are gross and coarse shocks. And it is at least possible, if not probable (indeed present investigations seem rapidly tending in this direction), that an extension of Hering's view, with such modifications as future inquiry may render necessary, to other processes than visual sensations, more especially to the inner working of the central nervous system, may not only carry us a long way on towards understanding inhibition and spontaneous activity but may lay the foundation of a new molecular physiology. This, however, is speculative and dangerous ground. But it seemed desirable to touch upon it since it illustrates a possible or probable new departure. What we have said of it and of the more manageable molecular problems of physiology will perhaps show that, vast and intricate as is the maze before the physiologist of to-day, he has in his hand a clue which promises, at least, to lead him far on through it."

We do not mean to enter here into the details of the physiological problem. We wish to set forth the philosophical aspect of the question alone, and so we need only the most general data of the physiology of life, and for our purpose it is best to limit our views to the physiology of animal life.

ANIMAL LIFE AND CONSCIOUSNESS.

It is not impossible that animal life is the simpler and more typical, perhaps even the more primitive form of life, and that plant life is of later origin. The differentiation may have occurred when in some cases the katabolic state was abandoned. It is possible that the most primitive organisms are simply metabolic structures, building up and breaking down. The preponderance of either katabolism or anabolism could easily lead to a differentiation. Plants are purely anabolic, while animals are prominently katabolic; and the more they develop their animal nature the more dependent do they become on the anabolism of plants.

Both domains, animals and plants, form a unity. Plant life seems stunted without animal life. It consists in a constant storage of energy waiting for the animal to utilize it, while animal life as we know it can not exist without plant life.

There is another contrast: An animal is, as it were, a plant that has its roots within itself, and a plant is like an animal whose stomach lies outside. This fundamental difference has an important consequence. Plants are stationary, while animals drift about. Plants are limited to the food that is conveyed to them. Animals must seize their nutriment and introduce it into their system, which forces them to go and hunt their food. But this very inconvenience offers them wide possibilities of a further education.

There are some animals which are stationary, such as corals and oysters. They have become fixed in their places by peculiar conditions and their food is carried to them by the surge that is in constant motion. Since we do not mean to enter into the physiological side of the problem, there is no need of discussing this exception which is apparent only and has practically nothing to do with our present problem.

The most important implication in the difference between plants and animals resulting from motility, is the rise of sentiency. In a limited degree plants, too, are sensitive or rather they possess a germ of sensitiveness which is called irritability. Irritability is a feature of all living matter, but in plant life it is limited. On a special irritation, i. e., an impression received from the outside, a certain movement is set free and this process is called reaction. The leaves of the sensitive plant when touched fold upon one another, and the Venus's fly trap will close its lid if a fly enters the calyx. We need not discuss here the finer differences between the irritability in the vegetable world and the sensibility of animal life. Be it sufficient to point out that both animals and plants are possessed of irritability, but that irritability appears in a more highly developed form in animals as sensibility. The main difference is that the irritability of plants remains purely physiological while in animals it develops into psychical states.

Here we touch the most significant feature of existence. In animals sensibility is possessed of an element which in the long course of evolution finally appears in the lower animals as feeling, and in the higher animals, especially in mammals, as consciousness, and in man as self-consciousness.

The appearance of consciousness has been the most puzzling problem of science, and it may be deemed the most difficult complication of the problem of life.

LIFE A PRODUCT OF ORGANIZATION.

The present number of *The Monist* contains two articles on the problem of life, one by Professor Arrhenius, well known for the distinction of having received the Nobel prize, and the other by J. Butler Burke, who has made a specialty of the problem of life. We have our own views on the subject, but are glad to present their solutions in

order to show how men of thought deal with this difficulty, and what propositions they have to make.

It is interesting to learn that so great an authority as Professor Arrhenius deems a transportation of life-germs possible not only from planet to planet, but also from one solar system to another, and so he makes our souls thrill at the idea of a possible kinship of our own life with that of the whole universe. He calls his theory "panspermy," and though it can never be proved, we may grant its possibility. Whether true or not the problem as to the origin of life remains, for if the life of our own planet is due to some germs that have been wafted hither from other worlds the problem remains the same. Those germs must have originated somehow, and if not, shall we consider them as consisting of a substance of their own? Shall we fall back on the old theory of vitalism? This is not Professor Arrhenius's meaning, apparently, for he does not deny that life-germs may also have originated independently on our own planet, and he assumes that the germs of our own planet would be very much like those of extra-terrestrial origin.

Mr. Burke's theory is radically different from that of Professor Arrhenius, and we ought to add, much bolder. He assumes that atoms are not absolutely like one another, an assumption which we may grant as possible, but if there are differences they must be trifling, for scientists are unable to trace them anywhere. We must consider that results produced by actions of masses the constituents of which are counted in numbers in which billions and trillions are negligible quantities, ought either to show irregularities in a marked degree or (if they are rare exceptions) would disappear. Now, so far as our minutest observations have gone, it appears that any molecules of elements can replace any other molecules of the same kind and number, without altering the result; and it would not

be impossible that the ultimate elements of matter of any kind are for all practical purposes absolutely equal. They may be formed with mathematical exactness and may be as true and as perfect in their shape as the light waves of the ether seem to be uniform.

Mr. Burke builds upon his assumption of the irregularity of atoms a new theory of the origin of the variety of different creatures endowed with life.

But the differences in animal organisms, and further in the characters of men, are not founded upon a difference of substance, as Mr. Burke would assume, and can much more easily be explained by a difference in the grouping of the elements of the animated life-cells and by their specialization into different functions. It is not a difference of matter but of form. The villain is made of the same material as the genius. There is no essential difference in their bodily structure, and if we could analyze their brains in an entirely reliable and absolutely perfect chemist's retort, we should not expect to find the slightest difference. Character, as we know, is a matter of form, and the difference implies a difference of activity and also a difference in the direction of activity. No one as yet has tried to discover a material substratum for a difference of direction, for that is due to form and is conditioned by relational circumstances. We might as well try to explain the excellence of Raphael's Sistine Madonna by the peculiarities of the canvas on which it is painted. The same is true in all difference in character, not only between different persons but also between the human and animal organization, and in organized life in general. The animal life-substance which, as chemists teach us, is approximately the same everywhere, will not yield to us the secret of the origin of life, for life is not a matter of substance, nor even of energy, but simply a question of form.

The seat of our intellectual life is generally granted

to be in the brain, and we know that the brain consists of most unstable structures which are subject to a change of material with every act of thinking. How then can we expect that the most essential differences of soul depend upon the peculiarities of some atoms? Suppose, however, this were true, what peculiar complications would arise, what new problems, theoretical as well as practical, and how important it would be to discover the most valuable atoms and to incorporate them into our system! Or shall we assume that there is a central atom somewhere in the brain which is not discarded in the general flux of matter and constitutes our personality?

The difference between living and inert substance, as we learn from its most obvious features, is due to organization. We might as well call living substance organized substance and inert matter that which is not organized. The terms "living" and "organized" are synonyms, and chemistry actually makes this distinction when speaking of inorganic and organic chemistry.

We must, accordingly, next discuss the question "What is organization?"

THE PRESERVATION OF FORM.

The function of organization (as we have stated above) is metabolism, but there is one peculiar feature in metabolism which must not be overlooked, because it is the essential condition of all higher development. This is the preservation of form, and the question now rises, How can the form be preserved of a substance which is confessedly in a constant flux?

The answer is simple enough. Living substance is neither a liquid nor a solid, but a form between the two which is a state of aggregation that is called viscous. Viscosity affords sufficient stability to retain sameness of form in a change of substance, and we must assume that in

the normal metabolism every breakdown or katabolic act is succeeded by an act of anabolism which reconstructs the original form. The breakdown is not entire but only partial. Though all living substance is very unstable, there are portions which are more so than others and to these the breakdown is limited. There the oxygen combines with carbon into carbonic acid, which is discarded as waste. Other elements are more or less implicated. They pass out of the system and in the process of restoration their places are filled up again by elements of the same kind in the very same configuration as their predecessors. We have only to assume that the atoms of organized structures possess a dearth of, or an affinity for, those atoms which break away in the katabolic process. They are thus attracted to their respective places and the result is the renewal of the former configuration.

Biology has investigated the lowest forms of life, such as microbes, fungi, and bacilli, and we see that everywhere life is the product of former life. We have not yet reached the lowest limit of life-forms. The very lowest fungi are already highly complicated, simple though they may appear in comparison to any of the higher animals. They are already the product of a definite heredity, that is to say, of a preservation of definite life-forms. Every kind of bacillus has its own type, and is produced only by spores of its species. We have not yet discovered the simplest forms of life-organisms. In the meantime naturalists have tried by artificial means to produce in the chemist's retort some living substance. They have succeeded in producing organic matter, the first substance thus secured being urea, but they have not succeeded in building up an organism, and there is scarcely any hope for success in producing the smallest living bacterium. This repeated failure has caused mystics to claim emphatically that life is a mystery that can never be solved, but in fact it only

proves that the original life-forms are too small to come as yet under our notice. If we only consider that the smallest fungi are about as complicated in comparison to atoms, as a tree is in comparison to a cell, we will understand that we need better microscopes than are now at our disposal before we can discover the most primitive form of life.

Theoretically considered it should not be impossible to reproduce organized life. The tendency of certain elements to organize into life plasm is in itself no more mysterious than chemical affinities or the formation of crystals.

There is no consistency in the methods of those who see nothing extraordinary in purely physical processes but are overawed when contemplating the basic fact of all biological phenomena, the formation of living structures. There is no less reason why the simplest life-forms under favorable conditions should not organize certain elements into the structure of life-organisms than for vapor to assume the form of snow crystals in the air at a given temperature, and neither process is theoretically incomprehensible. Both are equally mysterious and equally possible.

The difficulty in reproducing the smallest organism at all is due to the fact that all organisms known to us are already the result of a long development. Every one of them possesses a structure of its own which is the product of former impressions, the traces of which have been preserved and constitute its idiosyncrasy, i. e., its definite character. In order to produce the simplest fungus we would have to repeat in our laboratory all the processes which this species has passed through, from its origin as a speck of life until it became so specialized as to be a fungus with all its mysterious qualities and endowed with a distinctive character of its own. This may mean a development of millenniums or even more.

Consider then what the formation of a homunculus would imply. It would mean to repeat all the sense impressions that have formed all those numberless structures by artificial means, and the probability is that the natural process would be the quickest way of doing it. We would need for the experiment a planet in its primordial state soon after the formation of its crust, and must then allow a primitive speck of life to pass through the same process as did man from his primeval origin. We grant that the process might be abbreviated, but even then it would take too long to be actually attempted and so nature's way would after all prove the easiest way of producing the homunculus.

Those who are enthusiastic about producing life by artificial means forget the rôle which the preservation of form plays in the development of definite life-structures. So far we have been able to bring under observation only creatures whose character has been sufficiently specialized through a long period of development to make them unquestionably organic in their structure. Our microscopes are not powerful enough by far to show us the interaction even of molecules, much less of atoms. We even do not know whether atoms are discrete bodies of definite outline with a distinct individuality, or whether they are simply a mode of calculating the proportions in which the different elements combine. Until the time of the invention of microscopes that can look into the atomic structure of organisms we are not likely to discover the conditions under which organized life has originated and could be artificially reproduced. But while the origin of life is hidden from our observation there is no reason to assume that it is an unsolvable mystery, for we know positively that the nature of living substance is conditioned by organization, and organization again is a matter of form.

THE SPONTANEITY OF LIVING SUBSTANCE.

The problem has been raised, how can life which is possessed of the faculty of self-motion originate from a world of inert matter? But a closer inspection of the nature of matter will show that even the inorganic elements are not devoid of self-motion. The chemical atoms combine with or separate from other atoms according to definite affinities, and we have no reason to believe that their action is due to push. At any rate the assumption of a *vis a tergo* would be of no help to solve the problem of motion in the world, for it would only place the source of energy further back and would make that substance from which this pressure proceeded the really automatus or self-moving element. There is an activity even in so-called inert matter commonly named gravity, and there is also activity in chemical action. So we might as well consider self-motion an inherent quality of all substance as to credit it to some mysterious medium such as the ether which (for some good reasons) is assumed to surround and permeate the world of gross matter.

With respect to automatus motion organized life is by no means different from inorganic nature. Both move and are moved, there is attraction and repulsion; and if we analyze the nature of attraction and repulsion in the domain of animal life we find that life is possessed of the same kind of energy that is found in the domain of inorganic matter. Energy is simply motion, i. e., change of place; or strain, i. e., the possibility of producing motion. Energy, whether vital or purely physical, is measurable in foot pounds, and considered as energy pure and simple there is not the slightest difference between the two. Accordingly it is not motion nor self-motion which is the typical quality of organized life, but it is that function of the preservation of form which is due to organization, and

which in the animal world becomes the basis of the development of soul.

So far we have come to the conclusion that all existence is possessed of energy, which means it is automatous or bears in itself the power of spontaneous motion. We do not say that this spontaneity is arbitrary or haphazard, but on the contrary we conceive it to respond to stimuli in a definite way according to conditions most rigorously determined by laws of form. This spontaneity common to all existence attains a higher plane of chances with unlimited possibilities through organization. Organization intertwines the action of smaller centers by cooperation into larger and larger groups so as to produce higher and ever higher units of efficiency. There is a certain cooperation also in the physical and chemical world, but the cooperation of organized animal life (as we can infer from its effects) possesses one peculiarity of which inorganic nature seems to be absolutely void. It establishes an interrelation of the inner or subjective aspect of existence and so produces a concentration of its most intimate feature, the in-itself-ness of things.

What this inner aspect of things is can be inferred from its final result in organized animal substances: it is the awareness of their own being, viz., feeling, consciousness, psychic states, implying pain, pleasure and cognition.

THE INNER ASPECT OR SUBJECTIVITY.

The appearance of feeling is sometimes regarded as the greatest riddle of life and so it is. Nevertheless, we claim that whatever may be the practical difficulties of comprehending the several physiological conditions necessary for the rise of sentient organisms, the philosophical problem is not beyond any possibility of solution. We have but to assume that just as energy is a universal prop-

erty of all substances so that quality which is the condition of sentiency must be in existence everywhere.

We conceive of all existence as being like ourselves possessed of two aspects. It manifests itself objectively as action and subjectively as feeling. Within ourselves we are sentient beings, but externally in our relation to other existences we appear as bodies moving about, reacting upon our surroundings.

We call the innerness of existence "subjectivity" and the outerness "objectivity," and we regard both as aspects looked at from two different points of view. Every process in life can be looked at from two sides, either from within or from without. We ourselves call the innerness of our being our soul, and the outerness our body. In ourselves we feel our existence as awareness or consciousness, or in a word, as soul. The word soul most likely means the innerness of things. The German word *Seele* is still used in other applications as the inner portion of things. In the terminology of artillery the hollow inside of the cannon is called *Seele*, and *Federseele* is the pulp that is found inside of a feather.

Now I do not mean to say that atoms or molecules have souls or that they are endowed with intelligence—that theory, which is called panpsychism,⁴ is a mistake,—I only claim that every atom (or generally speaking all existence) possesses that subjectivity or innerness, a mere potentiality of feeling, out of which through organization the soul is woven.

Now we note that in the course of evolution which starts with the formation of organized substance, the significance of this innerness or subjectivity grows until it reaches the height of self-consciousness which is a characteristic of the rational soul of man. We must assume, therefore, that the

⁴For a discussion of panpsychism with Mr. Thomas A. Edison and Prof. Ernst Haeckel see *The Monist*, III, 234 ff.

interconnection of atoms and molecules in animal organized substance is such as to favor a cooperation of the subjective elements, while all inorganic combination leaves their inner potentialities still isolated.

The most simple state of consciousness is called a feeling, but we know very well that every feeling is already a highly complicated state of subjective awareness which presupposes a number of minor states of the same kind but more feeble, more insignificant, and less intense. The intensity of a clear and well defined feeling is due to the cooperation of a great number of minor subjective states which are called subliminal feelings because they fall below the threshold of consciousness.

When considering how infinitesimal the sentiency of a fly must be in comparison to the subliminal feelings of a human organism, and again, how much smaller still the sentiency must be of the several tiny cells of which the vital parts of the fly consist, we may approximately realize the absolute dimness of the feeling which stirs the innerness of the most primitive organized substance.

Here, if anywhere, in these minute specks of life-substance, we have a semblance of the mathematical idea of an infinitely small quantity; and yet it is only a semblance of it, for these most primitive structures must be discrete and real bodies which, if they could but become visible in microscopes of enormous power, would reveal a definite shape with a definite interrelation of parts and operating in a definite way. From such a primitive interlinking of subjectivities, the life of the soul has sprung; and we explain the origin of actual feeling out of the potential feeling of subjectivity from the consideration that isolated subjectivities remain blank; they become real feelings only by the cooperation with other potential feelings. Isolated feelings are mere irritability and feelings of any kind, potential as well as subliminal, can become states of aware-

ness only by being felt, and further one feeling can be felt by another only when internally interconnected through organization.

We are inclined to think that the subjective stir which develops into feeling takes place in the process of metabolism. It is a complicated process of oxidation or slow burning and it has been specialized for the function of sentiency in nervous substance, especially the gray matter of the brain.

So far as we can judge, the inner or subjective aspect of existence remains without any significance in the inorganic world, for there the actions or reactions of all things take place according to their external shape only. They have no choice; they act without previous deliberation. Their actions depend solely on their own constitution and the impacts of surrounding conditions. Ideas, thoughts, purposes, are utterly foreign to them. Gravity is determined by mass, chemical affinity must depend upon atomic structure, presumably the axes of rotation, etc. However, in the life of animals the inner aspect is increasingly gaining in significance. While the psychology of atoms (if we may be allowed to use this expression) would possess no significance whatever, the significance of the inner life (of the soul) grows in importance the higher life rises in the onward march of evolution.

MEMORY.

The most significant feature of the function of life (called metabolism) we have recognized to be the preservation of form; the basic condition of all psychical life of animal substance we find to be memory; and these two, the preservation of form and memory are two different aspects of one and the same thing. Memory is the feeling that accompanies the revival of a trace made by a former impression and so we understand that memory (the resus-

citability of feeling) is absolutely dependent upon the preservation of physiological structures.

Organization is a correlation which in animal life renders possible a communion of the subjective innerness of its correlated parts. This means that potential feelings are so interrelated as to produce a common effect; they focus, as it were, several subjectivities into one unified state; they intensify them by concentration, which if strong enough reaches the threshold of actual feeling. But the process can not be one of concentration only. Judging from analogy and trying to explain the lower as yet unknown strata of feeling from the higher ones that lie within the range of consciousness, we assume that contrast and comparison play a most important part in the development of the elementary forms of sentiency also. A feeling or state of awareness is lost unless it be connected with other states of feeling, and especially with memories of the past. In other words feeling in order to be felt must be in communication not only with simultaneous but also with prior feelings. Feeling in order to become a real psychic state can not remain isolated but must be organically interlinked with co-existing as well as pre-existing feeling, and this is possible only through memory.

We know that our feelings are different, and we assume that the difference of feelings is due to a difference of form. The nature of a feeling depends upon the physiological function of which it is the subjective aspect, and the function being a reaction upon an irritation depends upon the structure of the sentient organ and the impression or commotion by which it is caused. The reactions that take place in sentient substance leave traces, and if these traces are somehow stimulated their sentiency is reawakened and thereby a feeling is produced which resembles the former feeling in kind. It reproduces it according to the trace it has left in the living substance, and this reproduction of

former feelings is called reminiscence, and reminiscences are rendered possible through memory, which (we repeat) is the psychical aspect of the preservation of form in living structures. The preservation of form is therefore to be considered as the factor that builds up the soul.

States of feeling, however, are not yet mental phenomena. The most primitive feelings are mere irritations indicating pain or pleasure or indefinite states of various forms. Feelings change into mental states through becoming representative, and this process originates naturally and necessarily in sentient substance under the influence of the surrounding world.

MEANING AND SOUL.

Suppose we have some simple animal structure,—say an ameboid speck of life-substance. It is already highly organized and of a complicated formation in comparison to the most primitive life structures, but it is mere raw material in the eyes of the zoologist. This speck of life is subject to constant impacts of the surrounding world, and we know from the sundry facts which illustrate the doctrine of evolution that certain parts of the organism become specialized for special purposes. Ocelli originate first as spots sensitive to light; the organs of smell and taste originate under chemical influence; the ear, which is first an organ of equilibrium containing the otoliths, responds to sound-waves, etc. Every sensation of the sense organs responds to a definite impression and leaves a trace made on a track of a definite form. When an impression of some kind is made, the irritation travels on the tracks into which it fits to the old traces built up by former impressions and reawakens them. This reawakening is felt as a reminiscence, which by implication means that an impact of the same kind as formerly is being made. In this way sensations acquire meaning, they become rep-

representative, and external impacts come to signify the presence of external causes.

In the course of evolution the representativeness of sense impressions assumes a clearness which makes possible a conception of the actions that take place in the surrounding world. In other words the things surrounding an organism become more and more represented in analogous forms of feeling. The mind of a creature is nothing but the sum total of and the interaction among all these feelings.

We sum up the case thus: Feelings develop into sentient symbols and the soul is a system of sentient symbols.

This definition of the soul looks very simple but it is of far-reaching consequence. The representativeness of our ideas renders it possible for us to adjust our actions to conditions. It makes possible a conception of the world in which we live. Our soul is comparable to a map of our surroundings in which we know ourselves to be drifting; and since we have definite needs, definite wants, and definite demands, our ideas of things serve us as a guide for our conduct. In place of haphazard reaction, which in chemistry takes place according to the structure of the elements, an animal can adapt its reaction according to circumstances which will serve its own needs, and thus the most important consequence of the nature of the soul as a system of sentient symbols is the possibility of purpose. Man can direct his own course of action according to his foresight and knowledge of the surrounding world and whatever progress has been made and will be made, this will remain true even of the higher man of the future. His dignity and the pride of his superiority will always make it possible for him to pursue a definite purpose. Thereby he can make himself the master of his destiny.

THE RELIGIOUS ASPECT.

We have explained the origin of the soul in its very beginning, but we have not yet touched upon its nature and significance. Nor can we enter upon this subject to any extent because the field is too large and we would need the full space of another article to do it. But we will here in conclusion at least touch upon the problem, lest our explanation of the lowly origin of the soul and the simple mode of its operation be misunderstood.

There are people who have a misgiving as to the doctrine of evolution because it traces the pedigree of man back to the simians, and even further down to protoplasm and to the very mud of material existence; and their objection is in so far well grounded as man in spite of his kinship to all creation and although he consists of dust, is not born of the dust, but is the child of a higher presence. We have learned that the soul originates in sentiency by the meaning which sensations acquire, and soul is the systematized totality of the meanings which reside in the feelings of an organism. Now let us consider how man's mind is built up from small beginnings, and how he attains that marvelous power which makes him master of the earth and gives him the right to claim divine sonship. The growth of soul is a gradual incarnation of truth. The more correctly and adequately the soul reflects the world, the higher it ranges on the ladder of evolution. Truth is the criterion of the worth of the soul. With the light of reason a new vista is opened to the mind's eye, for a rational being catches glimpses of the universal, the eternal, the divine; it recognizes the vestiges of the cosmic order, of the norms of existence, of God. And so the soul of rational beings is an incarnation of those laws that sway the world; it becomes the dwelling place of the Most High, of the power which dominates the world and guides its course

with unfailing consistency—humanly speaking, with an absolute wisdom and perfect justice.

It is true that naturalists and psychologists of the present day are apt to overlook the moral significance of the soul, and a protest, such as that made by Mr. F. H. Giles in the present number, seems justified, but we believe that we can (indeed we shall have to) accept all the well assured consequences of science and the scientific conception of the world, of God, and of the soul, all of which appear so negative to the man who still clings to the old faith, or rather to the letter of its dogmas. We accept the scientific solution without, however, falling a prey to moral indifference, and without losing our ideal aspirations. We recognize that the spirit of the old faith is not wrong and wish to preserve all of it that is true and good. As the unity of a man's soul does not depend upon the presence of a monad in his mind, nor of any concrete unit, (be it an atom or a molecule, or a force center), but upon the systematic unification of reason, so our nobility, our dignity and our moral worth are not dependent upon the belief in the traditional conception of the soul as a mysterious entity. On the other hand, when we surrender the letter of a traditional belief, we need not give up the spirit of it; and so we must still preserve our fidelity to that formative factor that so far has guided our advance. We must preserve our love of truth as a divine authority to be respected in its objective import and to be respected even when it might not suit us, and above all we must practically apply our knowledge; we must not only behold and comprehend, but also actualize in our own being, the interrelation of life with life, of soul with soul, the solidarity of the interests of all, and work out our common aim and our common ideals.

People who know and feel the religious character of our moral aspirations, fear that our ideals may be lost when

the letter of our dogmas passes away, but we have learned that it is not the letter of the old dogmas, it is their spirit which animates all religion and has begotten the dogmas as a transient expression in a bygone period of man's development. For this reason let us listen to the warning of those who find modern psychology, at least as it is commonly taught, sorely wanting in the most essential point—the moral and religious significance of the soul.

EDITOR.

ON SOME POINTS IN THE FOUNDATION OF MATHEMATICAL PHYSICS.

THE need that showed itself, in comparatively modern times, of the greatest attainable logical precision in the concepts and methods of science led, in the field of pure mathematics, to the fundamental work of Weierstrass,¹ Cantor, Dedekind, Frege, Peano, and Russell, and, in the field of physics, to those researches of which the most important are associated with the names of Mach and Stallo.² In mathematics, the main result has been the proof that all pure mathematics deals exclusively with concepts definable in terms of the fundamental logical concepts, and that all its propositions are deducible from the fundamental logical principles;³ and, consequently, Kant's view that mathematical reasoning is not strictly formal, but always uses intuitions, that is to say, the *a priori* knowledge of space and time, can be definitely refuted.⁴ But, although

¹ In Weierstrass's case, this need can be seen to be in the highest degree *practical*, since many general theorems in the theory of analytic functions, "proved" by the older analysis, show themselves, on examination, to be unsound or insecure, and point the way to considerations of the very foundations of arithmetic. Such a theorem is that on the existence of a point of condensation in an infinite aggregate of real or complex numbers, of which the importance, in the theory of analytic functions, was seen by Briot and Bouquet, who gave a palpably insufficient proof of the theorem in question.

² The tendency towards "physical symbolism" (see a note below) is also marked by some of the works of Maxwell, Kirchhoff, Clifford, Hertz, Karl Pearson, Ostwald, and others. (Cf. H. Kleinpeter, *Die Erkenntnistheorie der Naturforschung der Gegenwart*, Leipsic, 1903; H. Höfding, *Moderne Philosophie*, Leipsic, 1905, pp. 98-117).

³ Cf. Russell, *The Principles of Mathematics*, vol. i, Cambridge, 1903; especially pp. v, 3-9.

⁴ Russell, *op. cit.*, pp. 4, 456-461; cf. Couturat, *Les principes des mathématiques*, Paris, 1905, pp. 235-308.

there is thus no such thing as a philosophy of *mathematics*, as distinct from one of logic, in physics the case is different. The above critical discussions have put in a clear light the fact, which is invariably overlooked by the cruder physicists, that the "world" with which we have to do in theoretical mechanics, for example, is but a mathematical scheme whose function it is to imitate, by logical consequences of the properties assigned to it by definition, certain processes of nature as closely as possible.⁵ Thus our "dynamical world" may be called a *symbol* of reality, and must not be confused with the reality itself.⁶

⁵ This fact forms the basis of Ward's first argument against naturalism in his *Naturalism and Agnosticism*, 2d ed., London, 1903, vol. i.

⁶ Ward (*Philosophical Orientation and Scientific Standpoints* [Annual address before the Philosophical Union of the University of California], Berkeley, 1904, p. 8) called those physicists who realize this gap between the concept and the reality "physical symbolists," as distinguished from the "physical realists," who are metaphysicians in spite of themselves.

When, in this address (p. 2), Ward insists on the implication of some reality behind appearance in the very use of the term "phenomenon," there seems to be a misunderstanding of the scientific position. It has, as is well known, often been urged by philosophers (see, for example, Dr. John Caird's *Introduction to the Philosophy of Religion*, new ed., Glasgow, 1901, pp. 14-15; Ward, *Naturalism and Agnosticism*, 2d ed., vol. i, 1903, p. 24, and vol. ii. pp. 275-276) and others (see, for example, H. Spencer, *First Principles*, 6th ed., 1900, p. 13), that, when we say that a thing is only a phenomenon or appearance, we imply that there is something which is not mere appearance but reality. Now, it is not true that to speak of a thing *a* implies that there is something which is not *a* (for example, to speak of an entity does not imply the self-contradiction that there is a non-entity); so that we must conclude that what the philosophers mean is: The word "appearance" is part of an in-completed phrase "appearance of. . . ." and hence an appearance which is not an appearance of anything is a contradiction. But it seems to me that men of science just took the word "appearance" or "phenomenon" as a general term for the facts (of consciousness) which Mach has called by the less metaphysical name of "elements" (*Contributions to the Analysis of the Sensations*, English translation, Chicago, 1897, pp. 5, 11, 18), and philosophers are apparently unable to appreciate the procedure of scientific people of taking a word, which may have had a previous meaning, re-defining it, and thereafter giving it no meaning not provided in the definition. It is true that Mach used the word "Erscheinung" in his *Erhaltung der Arbeit* of 1872 without pointing this out explicitly (he explicitly abandons the use of the word "sensation," because it seemed to refer to the (hypothetical) ego, in *op. cit.*, p. 18, but it should at least be remembered that the verbal implication in the word "appearance" is a trace of the philosophical point of view of the naive man (cf. Mach, *op. cit.*, pp. 10, 25-26) who thinks that experience is the knowable result of the interaction between an unknowable thing-in-itself and an unknowable ego. When a man of science talks of "phenomena" he no more implies the existence of another reality than did Mr. Vincent Crummies in *Nicholas Nickleby*, when he spoke of "The Infant Phenomenon."

Again, if we were to use the word "phenomenon" literally, with its reference to a crude philosophy, to talk of "phenomena *per se*" would be to talk

The present paper contains suggestions for the application of the more refined mathematical conceptions—such as those of “continuity” and “motion”—to the mathematical determination of our image of reality. When once we have begun to set up, for what is, at bottom, the *practical* need of completing facts in thought,⁷ the mathematical image of the universe, we have left behind all the philosophical problems, and we have only to look to the progress of sciences like those of electricity, chemistry, and psychology for the gradual completion of the image, or model, of the universe, and for the consequent precise answering of epistemological questions.⁸ And the mathematician is completely master of his model; he can repeat the occur-

of “those phenomena which are not phenomena, but realities.” But, if we use the word in the sense of Mach’s “elements of consciousness” and avoid (cf. Mach, *op. cit.*, p. 20) the question: *whose* consciousness?, which arises also from the verbally implied reference to a crude philosophy, I see no reason against calling the phenomena the only reality the “outer” world has for us.

⁷ Cf. Mach, *op. cit.* pp. 151 note, 171-176; *Popular Scientific Lectures*, 3d ed., Chicago, 1898, pp. 236-258, especially p. 253; pp. 186-213; *Die Mechanik in ihrer Entwicklung historisch-kritisch dargestellt*, 4te Aufl., Leipsic, 1901, pp. 510-528 (This work was translated into English by T. J. McCormack under the title *The Science of Mechanics*, Chicago: Open Court Pub. Co., 1893; 2d ed. 1902); *Die Principien der Wärmelehre historisch-kritisch entwickelt*, 2te Aufl., Leipsic, 1900, pp. 365-366, 391-405.

⁸ If we neglect the psychological aspect of the answer to Kant’s question: How is nature, as a system of laws, possible?, which was sketched in Ward’s address, pp. 11 *et seq.*, and *Naturalism and Agnosticism*, vol. ii, and only concern ourselves with what is implied logically by the existence of the science—our above “model” of nature, we arrive at a series of exact answers, expressed, of course, in mathematical language, to epistemological questions, and this series can only be completed when our model is sufficiently complete. As yet, our model may be judged complete in dynamical respects, at least. The postulate (if postulate it can rightly be called) that a model is possible seems to me to be the “postulate of the comprehensibility (or uniformity) of nature.”

In this way, it seems to me that the only remaining function for the philosopher, as distinguished from the logician, is to give the mind such acquaintanceship (which Heymans seems to call “absolute knowledge”; *Einführung in die Metaphysik auf Grundlage der Erfahrung*, Leipsic, 1905, pp. 1-2) with the conceptions of science (including such subjects as æsthetics and morals, which are as yet hardly more than possible sciences) as it has with redness or the taste of a pineapple (cf. Russell, *op. cit.*, p. v, where also the failure of “the search with a mental telescope” for the notion of *class*, was spoken of).

There are some suggestive remarks on epistemology in Stallo, *op. cit.*, pp. xxxv-xlii, 25-26, 68-69; and Mach, in his *Erhaltung der Arbeit*, of 1872, emphasized the “logical root” in the principle of the conservation of energy. But I will reserve a closer examination of these questions for another opportunity.

rences in his universe as often as he likes, he can make his "sun" stand still, or hasten, in order that he may publish the "Nautical Almanac" several years ahead of time. His position contrasts with that of the mere observer like that of the man who had thirty dollars in his mind with that of the man who had thirty dollars in his purse, in Kant's illustration of the untenability in logic of the ontological proof of the existence of God.⁹ The mathematical physicist can, without difficulty, become rich beyond the wildest dreams of avarice,—but by dream-gold.

I.

The first stage in the construction of our image is naturally the formation of a "dynamical world." This world closely resembles that of Russell,¹⁰ but it seems to me essential that the "space" should be an aggregate of complex *numbers* (with three unities), and the time should be an aggregate of real *numbers*, for only then can we describe the motions in this world by differential equations.¹¹ If, on the other hand, the space and time were (as Russell assumed)¹² any continua which are defined *purely ordinally*, we could give a meaning to a certain position being a "function" (even a continuous one)¹³ of

⁹ Cf. also Russell, *Mind*, 1905, p. 491.

It has been maintained with great ability, that this "proof" is not to be regarded as an attempt at a strictly logical proof, but as meaning that our whole conscious life is based on a universal self-consciousness (Caird, *op. cit.*, pp. 144-150.)

¹⁰ *Op. cit.*, pp. 480-481.

¹¹ Cf. Russell, *op. cit.*, pp. 326-329. There, even the notion of the *continuity* of a function was defined, after Dini, in a manner which is not purely ordinal, but is applicable, in the first instance, only to series of *numbers*. I have shown (see the next note but one) that the notion of continuity of a function can be given a purely ordinal (not necessarily connected with a series of numbers) definition, but not the notion of a differential quotient.

¹² *Op. cit.*, pp. 288, 437-440, 473.

¹³ I have shown (*Journ. für Math.*, Bd. CXXVIII, 1905, pp. 182-199.) that not only *function* (as Russell emphasized, *op. cit.*, pp. 263-267), but also *continuous function*, can be conceived in a purely ordinal manner. That a continuous function could be thus conceived was tacitly assumed by Russell (*op. cit.*, p. 480) in speaking of a continuous function whose argument was a series (not necessarily of numbers).

the time, but we could not to a differential quotient like dx/dt . From this it follows that not only do we have absolute time and position in our dynamical world in contradistinction to our real world, as Ward has already pointed out, but that "measurement" which we apply in actual experiments, has only an analogue in mathematics by a convention.¹⁴ It may be remarked, also, that Russell's¹⁵ statement that the world *may*, in spite of Mach's arguments, quoted by Ward, be twice given, only applies to the "dynamical world" (for there a mathematician is a sort of demiurge), and Mach and Ward were only speaking of our real world.¹⁶

¹⁴ The "distance" of two "points in an arithmetical space," (x, y) and (x', y') , may be defined, in a way recalling our empirical notion of distance, but which is not purely ordinal, as $+\sqrt{(x-x')^2+(y-y')^2}$, or as Jordan's "écart," $|x-x'|+|y-y'|$. Cf. also Russell, *op. cit.*, pp. 425-428.

¹⁵ *Op. cit.*, pp. 492-493.

¹⁶ The attempt to make certain purely mathematical concepts the foundation of reality may be illustrated by the ludicrous attempts at the substantialization of "ether" and "space" (cf. Stallo, *The Concepts and Theories of Modern Physics*, 4th ed. London, 1900, pp. xxiv-xxvi, 43-44, 227-230, 247; Ward, *op. cit.*, vol. i, pp. 128-138).

Helmholtz investigated mathematically the properties of rotational movement in an absolutely homogeneous, incompressible, perfect fluid, and Lord Kelvin based on these researches his well-known speculations on "vortex-atoms." Now, in order to realize the difference between these two investigations, let us reflect that what a mathematician can only mean by such a "fluid" is a certain aggregate of numbers (the numbers are here complex numbers with three independent unities, so as to mimic the space of experience), while the transformations or "motions" of parts of it underlie certain conditions which are described picturesquely by the words "incompressibility" and "perfection." The whole problem is purely mathematical; but, because, in nature, a process may be more or less exactly described by it when these natural processes are referred to certain determinable axes regarded as "fixed" and the various points of natural space are put in a metrical one-one correspondence with one aggregate of numbers, the names of the natural objects or properties have been transferred, usually in an uncritical manner, to the mathematical *images* of them. This it is that has given rise to the many attempts (of which Lord Kelvin's is an example) to attempt, inversely, to make the mathematical image the essence of the reality. Then we at once get the valid objections that the motion in such a fluid (supposed real) is not sensible, and that the "fluid" itself is, like "atoms" (cf. Stallo, *op. cit.*, p. 156 note), "things-in-themselves" (Stallo, *op. cit.*, p. 159; Mach, *op. cit.*, pp. 6, 23 note), or the result of attempts to reify the mathematical conception of "space" (Stallo, *op. cit.*, pp. 214-215)—in a conception which has arisen psychologically, though not logically, from the "space" of the physicists (cf. Mach, *op. cit.*, p. 55; *Die Principien der Wärmelehre*, 1900, pp. 456-457 and 71-77 [on the physical "continuum"]; *Mechanik*, 1901, pp. 232-253; *Erhaltung der Arbeit*, 1872, pp. 56-57), nothing at all.

The widespread notion that geometry is a science dealing with pure

2.

There comes the question of the meaning of such terms as "causality" in our image. Mach¹⁷ has, now, formulated the law of causality in the form: To every phenomenon α belongs a group which uniquely determines it (of which it is a one-valued function). Even this very general formulation (which includes Petzoldt's¹⁸ "Gesetz der Eindeutigkeit") leads to important consequences: it shows the identity of the two forms in which the principle of the conservation of energy has been expressed, and can itself be transformed mathematically into what is an equivalent of Poincaré's¹⁹ rather vague generalization of the principle of conservation of energy: "Il y a quelque chose qui demeure constant."

From this point, then, there opens a field of *mathematical* research. We have seen that the functions occurring in that aspect of the law of causality with which we have to do in mathematical physics are one-valued functions of many real variables ("phenomena" or "elements," as Mach calls them), which, in the case of dynamics, can

space—a notion not to be confused with the space of the physicists or number-aggregates—leads to many contradictions in geometry and mechanics. There is much that can be done in the investigation of the purely ordinal properties of series, but, in order that arithmetical notions, such as that of a differential quotient, may be used, our "space" and "time" must be numerical aggregates. And when this is the case, the difficulties as to absolute or relative position and motion cease to appear; while position and motion in a "pure" space has the same difficulties as in the "ether" just described. An example of an attempt to retain "the philosophical dictum that all motion is relative," a pure space, and differential equations of motion, in one book on mechanics, is given by A. E. H. Love's *Theoretical Mechanics*, (Cambridge, 1897). A "motion relative to a frame of reference" is only satisfactory if we can, so to speak, ear-mark the frame; and there is no way of doing this in a "pure" space.

¹⁷ Cf. *Die Geschichte und die Wurzel des Satzes von der Erhaltung der Arbeit*, Prag, 1872, pp. 35-37; *Mechanik*, 1901, pp. 513-515.

¹⁸ J. Petzoldt, "Maxima, Minima und Oekonomie," *Vierteljahrsschrift für wiss. Philosophie*, Jahrg. XIV, 1890, pp. 206, 354, 417; "Das Gesetz der Eindeutigkeit," *ibid.*, Jahrg. XIX, 1895, pp. 146-203; cf. Mach, *Mechanik*, 1901, p. 409.

¹⁹ *La Science et l'hypothèse*, éd. revue et corrigée, Paris, p. 153.

be replaced by *one* real variable, the time; there arises the question as to what restrictions on these functions (to be continuous, analytic, . . .) are necessary or convenient in that mathematical image of the real world which we call the "dynamical world."²⁰ I will illustrate this.

Suppose that x is a co-ordinate in a dynamical problem: in any particular problem our object is to find an expression of x in terms of the time (t), and, in conformity with the law of causality, we assume that x is a (one-valued) function of t :

$$x=f(t).$$

Now, in order that the real number called "the velocity of x at $t=t_0$ " ($[dx/dt]t=t_0$) should exist, $f(t)$ must be differentiable at $t=t_0$; and, for this, continuity of $f(t)$ is necessary but not sufficient, while an "analytic" character of $f(t)$ near $t=t_0$ is sufficient but not necessary; and so on. We can, indeed, contemplate the most various dynamical worlds; for example, while the law of causality holds, a moving point may have no velocity at any point of its (continuous) path. For this, we have only to suppose $f(t)$ to be a continuous function without a derivative, as Appell and Jannaud have done.²¹

This thorough investigation of the dynamical world with all the resources of the modern theories of functions and of aggregates, although it seems very far removed from what are commonly supposed to be the objects of mathematical physics, appears to me to be the only way in which we can be sure that the image of reality at which we aim,

²⁰For this, cf. A. Voss, "Die Prinzipien der rationellen Mechanik," *Encykl. der math. Wiss.*, iv. I., pp. 20-30.

²¹"Remarques sur l'introduction de fonctions continues n'ayant pas de dérivée dans les éléments de la dynamique," *Compt. rend.*, T. XCIII, 1881, p. 1005; *Archiv für Math.*, Bd. LXVII, 1882, p. 160.

Similar examples are afforded by the contemplation of one of Peano's "curves" which fill a square, as the path of a moving point (cf. A. Schönflies, *Die Entwicklung der Lehre von den Punktmannigfaltigkeiten*, Leipzig, 1900, pp. 121-125; W. H. Young and [Mrs.] Grace Chisholm Young, *The Theory of Sets of Points*, Cambridge, 1906, pp. 165-170, 219-232, 291-292.)

by successive approximations, is what Hertz²² called a "logically *permissible* image."

In this way, we shall come across such problems as the following: The law of the conservation of energy is now recognized as a specialized form (the form of which has been discovered by observation) of the law of causality; what limitations on the form of the functions involved in the latter law does this specialization involve?

3

Every theorem in the theory of functions or in that of differential equations brings to light a property of the dynamical world which sometimes appears very surprising. Thus, the (not yet completely solved) problem of finding the necessary and sufficient conditions under which a solution of a system of ordinary (real) differential equations can exist, would give us the necessary and sufficient conditions that a moving body which is somewhere at some time should be somewhere at some other time. But this surprising appearance is only due to our use of phrases we use about real things to describe occurrences in the dynamical world,—a world which has no secrets from us, if our minds are powerful enough, but which is only an image of the real world, although an image which, perhaps, may become indefinitely like the original in certain respects.

²² Heinrich Hertz, *The Principles of Mechanics Presented in a New Form*, translated from his *Werke*, Bd. iii, by D. E. Jones and J. T. Walley, London, 1899, p. 2.

In this place, it seems proper to refer to Cantor's discovery, at the end of his third paper "Ueber unendliche, lineare Punktmannichfaltigkeiten" (*Math. Annalen.*, Bd. XX, 1882, pp. 113-121), that a continuous motion may be possible in a discontinuous space; and his consequent suggestion that an attempt might be made to form, for purposes of comparison, a "modified mechanics" for spaces of the kind to be described. From a continuous arithmetical space of two or more dimensions, remove an enumerable but everywhere-dense aggregate (such as that of all rational, or of all algebraic numbers). Any two points of the remainder (A) can always be connected by a *continuous* line (formed of a succession of arcs of circles), all the points of which belong to A.

4.

This investigation of the principles of mathematical physics permits us to clear up some difficulties which every mathematician accustomed to exactness feels in current presentations of mathematical physics. For example, in investigating the vibrations of a stretched cord after the method introduced by Lagrange,²³—in which we contemplate the vibrations of a finite number (n) of masses placed at equal distances along an elastic mass-less "string," and then go to the limit by supposing n to increase *ad infinitum*,—any one who is acquainted with the theory of aggregates makes the following remark. If the cord is a continuum (of type θ); since we cannot say more of the limiting case above than that the mass-points be everywhere dense on the string (a condition which need only make these mass-points of type η) a passage to the limit does *not* give us the cord, since a series of type θ always contains one of type η , but a series of type η never contains one of type θ .

This difficulty, now, vanishes if we assume, as is natural if we wish to make our image conform to nature, that the cord always represents a *continuous* function of its position at rest, a straight line (i. e., "the cord is never to break"). For we know that a continuous function is determined for a continuum (of type θ) when it is given for merely an everywhere-dense aggregate (of type η).

5.

Finally, it may be mentioned that if, and only if, the functions occurring in our formulation of the law of causality, are *rational* functions, a *finite* number of particular

²³ "Recherches sur la nature et sur la propagation du son," *Misc. Taur.*, t. i., 1759, and "Nouvelles recherches," *ibid.*, t. ii., 1760-1761; *Œuvres*, t. i.; cf. Mach, *Wärmelehre*, pp. 110-111; R. Reiff, *Geschichte der unendlichen Reihen*, Tübingen, 1889, pp. 132-134.

determinations of the values of the function suffice to construct the whole function. In other words, the problem of interpolation is here, and here only, determinate. The translation of this into a form suitable for a simple mechanical case is: If the coordinates q_1, q_2, \dots, q_n , of a mechanical system are all rational and whole functions of t of degrees which do not exceed n , the finding of the values of the q 's for any $n+1$ particular values of t alone suffices for the determination of the complete expression of the q 's as functions of t .

The practical importance of this results from the known fact that *any* real, one-valued, continuous function of t can be approximated *quam proxime* by a rational and whole function of t .²⁴ It is, then, a plausible supposition that the postulate that all the functions occurring in the mathematical formulation of the law of causality are rational and whole functions suffice for the construction of a "dynamical world" which copies, with an approximate-ness of which any discrepancy is not observable, the scientific aspect of the real world.

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²⁴ This theorem was discovered by Weierstrass ("Ueber die analytische Darstellbarkeit sogenannter willkürlicher Funktionen reeller Argumente," 1885, *Werke*, Bd. iii, pp. 1-37), and other proofs have been given by Picard, Volterra, Runge, Lebesgue, and Mittag-Leffler (cf. Borel, *Leçons sur les fonctions de variables réelles et les développements en séries de polynômes*, Paris, 1905, pp. 50-92).

The extension of the problem of interpolation from *rational* functions to analytic functions in general, and some allied questions was treated in my above-cited paper in the *Journal für Mathematik* for 1905.


SOME AMAZING MAZES.

"Mazes intricate,
Eccentric, interwov'd, yet regular
Then most, when most irregular they seem."
Milton's Description of the Mystical Angelic Dance.

THE FIRST CURIOSITY.

ABOUT 1860 I cooked up a *mélange* of effects of most of the elementary principles of cyclic arithmetic; and ever since, at the end of some evening's card-play, I have occasionally exhibited it in the form of a "trick" (though there is really no trick about the phenomenon,) with the uniform result of interesting and surprising all the company, albeit their mathematical powers have ranged from a bare sufficiency for an altruistic tolerance of cards up to those of some of the mightiest mathematicians of the age, who assuredly with a little reflection could have unraveled the marvel.

The following shall describe what I do; but you, Reader, must do it too, if you are to appreciate the curiosity of the effect. So be good enough as to take two packets of playing-cards, the one consisting of a complete red suit and the other of a black suit without the king, the cards of each being arranged in regular order in the packet, so that the face-value of every card is equal to its ordinal number in the packet.

 N. B. Throughout all my descriptions of manipulations of cards, it is to be understood, once for

all, that the observance of the following STANDING RULES is taken for granted in all cases where the contrary is not expressly directed: Firstly, that a pack or packet of cards held in the hand is, unless otherwise directed, to be held with backs up (though not, of course while they are in process of arrangement or rearrangement,) while a pile of cards FORMED on the table (in contradistinction to a pile placed, ready formed, on the table, as well as to rows of single cards spread upon the table,) is always to be formed with the faces displayed, and left so until they are gathered up. Secondly, that, whether a packet in the hand or a pile on the table be referred to, by the "ordinal, or serial, number" of a single card or of a larger division of the whole is meant its number, counting in the order of succession in the packet or pile, from the card or other part at the BACK of the packet or at the BOTTOM of the pile as "Number 1," to the card or other part at the FACE of the packet or the TOP of the pile; the ordinal or serial number of this last being equal to the cardinal number of cards (or larger divisions COUNTED,) in the whole packet or pile; and the few exceptions to this rule will be noted as they occur; Thirdly, that by the "face-value" is meant the number of pips on a plain card, the ace counting as one; while, of the picture-cards, the knave, for which J will usually be written, will count as eleven, the queen, or Q, as twelve, and the king, K, either as thirteen or as the zero of the next suit; and Fourthly, that when a number of piles that have been formed upon the table by dealing out the cards, are to be gathered up, the uniform manner of doing so is to be as follows: The first pile to be taken (which pile this is to be will appear in due time,) is to be grasped as a whole and placed (faces up,) upon the pile that is to be taken next. Then those two piles are to be grasped as a whole, and placed (faces up,) upon the pile that is next to be taken; and so on, until all the

piles have been gathered up; when, in accordance with the first Standing Rule, the whole packet is to be turned back up. And note, by the way, that in consequence of the manner in which the piles are gathered, each, after the first, being placed at the back of those already taken, while in observance of the second Standing Rule, we always count places in a packet from the back of it, it follows that the last pile taken will be the first in the regathered packet, while the first taken will become the last, and all the others in the same complementary way, the ordinal numbers of their gathering and those of their places in the regathered packet adding up to one more than the total number of piles.

Of course, while the red packet and the black packet are getting arranged so that the face-value of each card shall also be its ordinal, or serial, number in the packet, the cards must needs be held faces up. But as soon as they have been arranged, the packet of thirteen cards is to be laid on the table, *back up*. You then deal,—for, let me repeat it, Reader, by the inexorable laws of psychology, if you do not actually take cards, (and the U. S. Playing-Card Company's "Fauntleroy" playing cards are the most suitable, although any that run smoothly will do,) and actually go through the processes, the whole description can mean nothing to you;—*you* deal, then, the twelve black cards, one by one, into two piles, the first card being turned to form the bottom of the first pile, the second that of the second pile (on the right hand of the first pile,) the third card going on the first pile again, the fourth on the second, and every following card being placed immediately upon the card whose ordinal, or serial, number in the packet before the deal was two lower than the former's ordinal, or serial, number then was. *The last card, however, is to be exceptionally treated.* Instead of being placed on the top of the second pile according to the rule just given, it is

to be placed on the table, face up, and apart from the other cards, to make the bottom card of an isolated pile, to be called the "*discard pile*"; while, in place of it, the first card of the pile of cards of the red suit, which card will, of course, be the ace, is to be placed face up on the top of the second of the two piles formed by the dealing, where that discarded card would naturally have gone. Now you gather up these two piles by grasping the first, or left-hand, pile, placing it, face up, upon the second, or right-hand, pile, and taking up the two together; and you then at once turn the packet back up in compliance with the first standing rule. This whole operation of *firstly*, dealing out into two piles the packet that was at first entirely composed of black cards; but *secondly*, placing the last card, face up, on the discard pile, and *thirdly*, substituting for it the card then at the top of the pile of red cards, by placing this latter, face up, upon the top of the second pile of the deal, and then, *fourthly*, putting the left-hand, or first, pile of the deal, face up, upon the second, and having taken up the whole packet, turning it with its back up,—this whole quadripartite operation, I say, is to be performed, in all, twelve times in succession. My statement that in this operation the last card is treated *exceptionally* was quite correct, since its treatment made an exception to the rule of placing each card on the card that before the deal came two places in advance of it in the packet. Had I said it was treated *irregularly*, I should have written very carelessly, since it is just one of those cases in which a violation of a regularity of a low order establishes a regularity of a much higher order, (if John Milton knew the meaning of the word "regular,")—a pronouncement which must be left for the issue of the performance to ratify; and you shall see, Reader, that the event will ratify it with striking emphasis. Already, we begin to see some regularity in the process, since each of

the twelve cards placed on the discard-pile in the twelve performances of the quadripartite operation is seen to belong to the black-suit; so that the packet held in the hand and dealt out, from being originally entirely black, has now become entirely red. Having placed the red king upon the face of this packet, you now lay down the latter in order to have your hands free to manipulate the discard-pile. Holding this discard-pile as the first standing rule directs, you take the cards singly from the top and range them, one by one, from left to right, in a row upon the table, with their backs up. The length of the table from left to right ought to be double that of the row; and this is one of the reasons for preferring cards of a small size. To guard against any mistake, you may take a peek at the seventh card, to make sure that it is the ace, as it should be. The row being formed, I remark to the company, as you should do in substance, that I reserve the right to move as many of these black cards as I please, at any and all times, from one end of the row to the other; but that beyond doing that, I renounce all right to disarrange those cards. Then, taking up the red cards, and holding the packet with its back up, I (and so must you,) request any person to cut it. When he does so, you place the cards he leaves in your hand at the back of the partial packet he removes. This is my proceeding, and must be yours. You then ask some person to say into how many piles (less than thirteen,) the red cards shall be dealt. When he has prescribed the number of piles, you are to hold the packet of red cards back up, and deal cards one by one from the back of it, placing each card on the table face up, and each to the right of the last card dealt. When you have dealt out enough to form the bottom cards of piles to the number commanded, you return to the extreme left-hand pile, *which you are to imagine as lying next to, and to the right of, the extreme right-hand pile,*—as in fact it would come

next in clockwise order, if the row were bent down at the ends in the manner shown in Fig. 1, where the piles (here supposed to be eight in all,) are numbered in the order in which their bottom cards are laid down. Indeed, when more than seven piles are ordered, it is not a bad plan actually to arrange them so. So, counting the piles round and

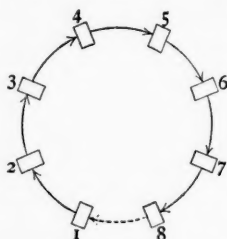


Fig. 1.

round, whether you place them in a circle or not, you place each card on the pile that comes clockwise next after, or to the right of the pile upon which the card next before it was placed (regulating your imagination as above stated,) and so you continue until you have dealt out the whole packet of thirteen cards. You now

proceed to gather up the piles according to the Fourth Standing Rule.

That rule, however, does not determine the order of succession in which the piles are to be taken up. I will now give the rule for this. It applies to the dealing of any prime number of cards, or of any number of cards one less than a prime number, into any number of piles less than that prime number. It happens that that form of statement of this rule which is decidedly the most convenient when the number of piles does not exceed seven, as well as when the whole number of cards differs by less than three from some multiple of the number of piles, becomes quite confusing in other cases. A slight modification of it which I will give as a second form of the rule, sometimes greatly mitigates the inconvenience; and it will be well to acquaint yourself with it. But for the most part, when the first form threatens to be confusing, it will be best to resort to that form of the rule which I describe as the third.

For the purpose of this "first curiosity" (indeed, in every case where a prime number of real cards are dealt out,) it

matters not what pile you take up first. But in certain cases we shall have occasion to deal out into piles a number of cards, such as 52, which is one less than a prime number. In such case, it will be necessary to add *an imaginary card* to the pack, since a real card would interfere with certain operations. Now imaginary cards, if allowed to get mixed in with real ones, are liable to get lost. Consequently, in such cases, we have to keep the imaginary card constantly at the face of the pack by taking up first the pile on which it is imagined to fall, that is, the pile next to the right of the one on which the last real card falls. I now proceed to state, in its three forms, the rule for determining what pile is to be taken up next after any given pile that has just been taken. It is assumed that the whole pack of cards dealt consists of a prime number of cards; but, of these cards, the last may be an imaginary one, provided the pile on which it is imagined regularly to fall be taken up first.

First Form of the Rule. Count from the place of the extreme right-hand pile, as zero, either way round, clockwise or counterclockwise,—preferably in the shortest way,—to the place of the pile on which the last card, real or imaginary, fell. Then, counting the original places of piles, whether the piles themselves still remain in those places or have already been picked up, from the place of the pile last taken, in the same direction, up to the same number, you will reach the place of the next pile to be taken.



Fig. 2.

Example. If 13 cards are dealt into five piles, the 13th card will fall on the second pile from the extreme right-hand pile going round counter-clockwise. Supposing, then,

that the first pile taken is the right-handmost but one, they are all to be taken in the order marked in Fig. 2.

Second Form. Proceed as in the first form of the rule until you have repassed the place of the first pile taken. You will then always find that the place of the last pile taken is nearer to that of some pile, P, previously taken, than it is to the place of that taken immediately before it. Then, the next pile to be taken will be in the same relation of places to the pile taken next after the pile P.

Example. Let 13 cards be dealt into 9 piles. Then the last card will fall on the pile removed 4 places clockwise from the extreme right-hand pile. Then, when you have removed four piles according to the first form of the rule, you will at once perceive, as shown in Fig. 3, (where



Fig. 3.

it is assumed that the extreme left-hand pile was the one to be taken up first,) that for the rest of the regathering, you have simply to take the pile that stands immediately to the left of the place of the last previous removal but one.

Third Form. In this form of the rule vacant places are not counted, but only the remaining piles, which is sometimes much less confusing. It is requisite, however, carefully to note the place of the pile first taken. You begin as in the first form of the rule; but every time you pass over the place whence the first pile was removed, you diminish the number of your count by one, beginning with the count then in progress; and you adhere to this number until you pass the same place again, and consequently again diminish the number of your count, which will thus ultimately be reduced to one, when you will take every pile you come to.

Example. Let a pack of 52 cards be dealt into 22 piles. The first pile taken up must be the one upon which the imaginary 53d card falls. It is assumed that, before the deal the cards were arranged in suits in the order $\diamond \spadesuit \heartsuit \clubsuit$ and in each suit in the order of their face-values. Then the different columns of Fig. 4 show the cards at the tops of the different piles while the different horizontal rows

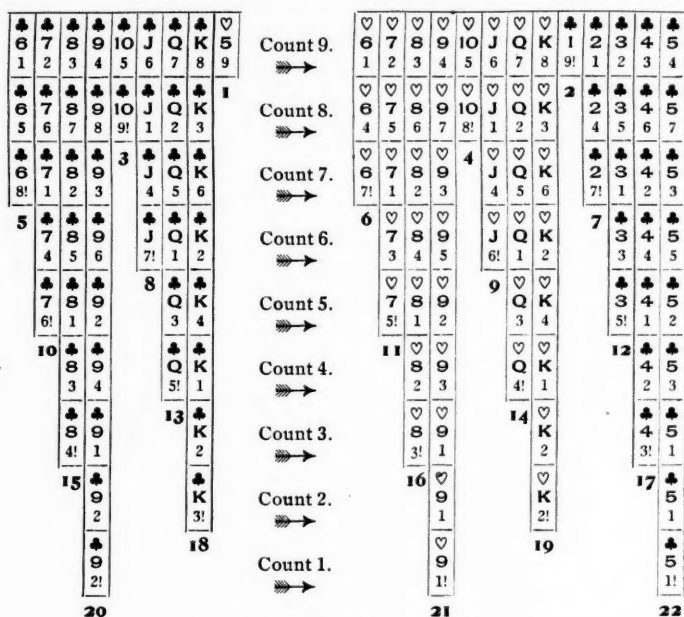


Fig. 4.

show what piles remain, just before you come to count the left-hand-most of the remaining piles, as your countings successively pass through the whole row of piles. The gap between the columns just after the place where the imaginary card is supposed to have fallen, contains the direction thereafter to diminish by one the number of piles you count. Beneath the designations of the top cards are small type

numbers which are the numbers in your different countings through the row of piles; and the last number in each count is followed by a note of admiration that is to be understood as a command to gather up that pile. Beneath it is a heavy faced number, which is the ordinal number of that removal.

I hate to bore readers who are capable of exact thought with redundancies; but others often deploy such brilliant talents in not understanding the plainest statements that have no familiar jingle, that I must beg my more active-

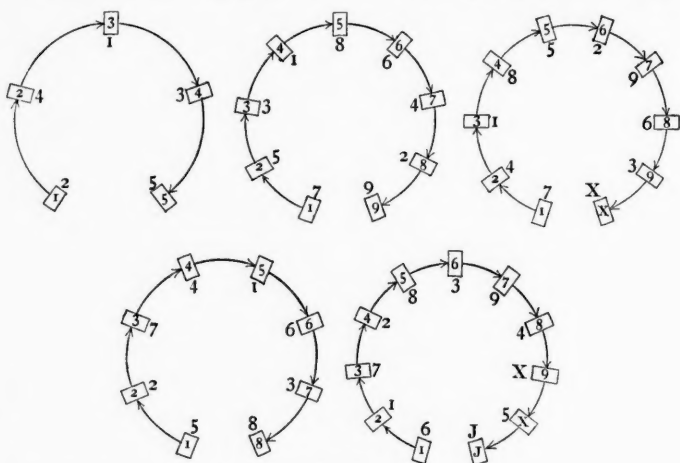


Fig. 5.

minded readers to have patience under the infliction while I exhibit in Fig. 5 the orders in which 5, 8, 9, 10, and 11 piles formed by dealing 13 cards are to be taken up.

When the red cards have thus been regathered, you again hold out the packet to somebody to cut, and again request somebody to say into how many piles they shall be dealt "in order that the mixing may be as thorough as it may." You follow his directions, and regather the piles according to the same rule as before. If your com-

pany is not too intelligent, you might venture to ask somebody, before you regather the piles, to say what pile you shall take up first; but this will be presuming a good deal upon the stupidity of the company; for an inference might be drawn which would go far toward destroying the surprise of the result. Nothing absolutely prevents the cards from being cut and dealt any number of times. When the number of piles for the last dealing has been given out, you will have to ascertain what transposition of the black cards is required. There are three alternative ways of doing this, which I proceed to describe.

The best way is to multiply together the numbers of piles of the different dealings of the red cards, subtracting from each product the highest multiple of 13, if there be any, that is less than that product. The result is the cyclical product. By "the different dealings," you here naturally understand those that have taken place since the last shifting of the black row. If a wrong shift has been made, the simplest way to correct it, after new cuttings and dealings, is to resort to a peep at the black ace, and to determining where it ought to be in the third way explained below.

Thus, if the red cards have been dealt into 5 piles and into 3 piles, since 3 times 5 make 15, and $15-13=2$, the cyclical product is 2. You now proceed to ascertain how many times 1 has to be cyclically doubled to make that cyclical product. But if 6 doublings do not give it,—which six doublings will give

- 1 doubling, twice 1 are 2,
- 2 doublings, twice 2 are 4,
- 3 doublings, twice 4 are 8,
- 4 doublings, twice 8 less 13 make 3,
- 5 doublings, twice 3 are 6,
- 6 doublings, twice 6 are Q,—

I say if none of the first six doublings gives the cyclical product of the numbers of piles in the dealings, you resort to successive cyclical halvings of 1. The cyclical half of an even number is the simple half; but to get the cyclical half of an odd number, add 7 to half of one less than that number. Thus,

The cyclical half of 1 is $(0 \div 2) + 7 = 7$;
 " " " " 7 is $(6 \div 2) + 7 = X$;
 " " " " X is 5;
 " " " " 5 is $(4 \div 2) + 7 = 9$;
 " " " " 9 is $(8 \div 2) + 7 = J$;
 " " " " J is $(X \div 2) + 7 = Q$.

If the cyclical product of the numbers of piles in the dealings is one of the first six results of doubling one, you will have (when the time comes,) to bring one card from the right-hand end of the row of black cards to the left-hand end for each such doubling. Thus, if the red cards have twice been dealt into 4 piles, four cards must be brought from the right end to the left end of the row of black cards. For $4 \times 4 - 13 = 3$ and $1 \times 2^4 - 13 = 3$. But if that cyclical product is one of the first six results of successive cyclical halvings of one, one card must be carried from the left to the right end of the row of black cards for every halving. Thus, if the red cards have been dealt into 6 and into 8 piles, 4 black cards must be carried from the left-hand end of the row to the right-hand end of the row. $6 \times 8 - 3 \times 13 = 9$ and it takes 4 cyclical halvings to give 9. If the product of the numbers of piles in the dealings is one more than a multiple of 13, the row of black cards is to remain unshifted.

The second way of determining how the black cards are to be transposed is simply, during the last of the dealings, to note what card is laid upon the king. The face-value of this card is the ordinal, or serial place in the row,

counting from the left-hand extremity of it, which the ace must be brought to occupy. Now if you remember, as you always ought to do, where the ace is in the row, you will know how many cards to carry from one end to the other so as to bring the ace into that place. But if in the last dealing the king happens to fall at the top of one of the piles, two lines of conduct are open to you. One would be, in regathering the piles, by a pretended awkwardness in taking up the pile that is to be taken next before the one that the king heads, at first to leave its bottom card on the table, so as to get a glimpse of it before you take it up, as you would regularly have done at first; and if the king should happen to be the last card dealt, the card at the back of the packet would be the one for you to get sight of, by a similar imitation blunder. In either case, the card you so aim to get sight of would show the right place for the ace in the row. But if you doubt your ability to be gracefully awkward, it always remains open to you to ask to have the red packet cut again and a number of piles for a new deal to be ordered.

The third way of determining the proper transposition of the black cards is a slight modification of the second. It consists in looking at the card whose back is against the face of the king, when you come to cut the red packet so as to bring the king to the face. [Any practical psychologist, such as a prestigiator must be, can, with the utmost ease look for the card he wants to see, and can inspect it without detection.]

But whichever of these methods you employ, you should not touch the row of black cards until the red cards, having been regathered after the last dealing, you have said something like this: "Now I think that all these dealings and cuttings and exchanges of the last cards have sufficiently mixed up the red cards to give a certain interest to the fact that I am going to show you; namely, that

this row of black cards form an index showing where any red card you would like to see is to be found in the red pack. But since there is no black king in the row, of course the place of the red king cannot be indicated; and for that reason, I shall just cut the pack of red cards so as to bring the king to the face of it, and so render any searching for that card needless." You then cut the red cards. That speech is quite important as restraining the minds of the company from reflecting upon the relation between the effect of your cutting and that of theirs. Without much pause you go on to say that you shall leave the row of black cards just as they are, simply putting so many of them from one end of the row to the other. You now ask some one, "Now, what red card would you like to find?" On his naming the face-value of a card, you begin at the left-hand end of the row of black cards and count them aloud and deliberately, pointing to each one as you count it, until you come to the ordinal number which equals the face value of the red card called for; and in case that card is the knave or queen, you call "knave" instead of "eleven" on pointing at the eleventh card, and "queen" on pointing at the last card. When you come to call the number that equals that of the red card called for, you turn the card you are pointing at face up. Suppose it is the six, for example. Then you say, naming the card called for, that that card will be the sixth; or if the card turned up was the knave, you say that the card called for will be "in the knave-place," and so in other cases. You then take up the red packet, and counting them out, aloud and deliberately, from one hand to the other, and from the back toward the face of the packet, when you come to the number that equals the face-value of the black card turned, you turn over this card as soon as you have counted it, and lo! it will be the card called for.

The company never fail to desire to see the thing done

again; and on their expressing this wish, after impressing on your memory the present place of the black ace, you have only to hold out the red cards to be cut again, and you again go through the rest of the performance, now abbreviating it by having the cards dealt only once. The third time you do it, since you will now have given them the enjoyment of their little astonishment, there will no longer be any reason for not asking somebody to say what pile you shall take up first, although that will soon lead to their seeing that all the cuttings are entirely nugatory. Still they will not thoroughly understand the phenomenon.

If you wish for an explanation of it, the wish shows that you are not thoroughly grounded in cyclic arithmetic, and that you consequently still have before you the delight of assimilating the first three *Abschnitte* (for that matter the first hundred pages would suffice to reveal the foundations of the present mystery; but I confess I do not particularly admire the first *Abschnitt*) of Dedekind's lucid and elegant redaction of the unerring Lejeune-Dirichlet's "*Vorlesungen über Zahlentheorie*." But, perhaps, on another occasion I will myself give a little essay on the subject, "adapted to the meanest capacity," as some of the books of my boyhood used, not too respectfully, to express it.

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A BRIEF HISTORY OF EARLY CHINESE PHILOSOPHY.

ETHICS.

CONFUCIANISM.

THE moral life can be said to have been the only philosophical subject which has seriously interested the Chinese and has been considered worthy of their earnest speculation, from their earliest stage of culture down to the present day. It has been their inmost conviction that the universe is the manifestation of a moral principle, and that every existence has some mission in its way to teach humanity a moral lesson. They did not, however, conceive the world to be the creation of a personal god who superintends and directs its course. Their Heaven (*t'ien*),¹ or Heavenly way (*t'ien tao*),² or Heavenly Ordeal (*t'ien ming*)³, is a sort of natural law, that is not personal but somewhat deterministic. When we do not follow its regulations, we suffer the consequence merely because we violated it, and not because we incurred the displeasure of some august being. The Heavenly Way is thoroughly moral and would not tolerate anything that contradicts it, but no religious significance seems to have been attached to their conception. Man is a moral being pure and simple, there is no intimate relation between morality and religion, as the

¹ 天

² 天道

³ 天命

latter is generally understood by Christians. Throughout the writings of Confucius we are unable to find any religious appeal made either by him or by his followers to a power supernatural or transcendental. If they had a clear conscience they had everything that they desired, and there was nothing outside that would disturb their peace of mind. They were thoroughly moral, they were thoroughly human. Therefore, Confucius made humanism the first principle of his ethics, and that is the very reason why the Chinese honor Confucianism in preference to all other doctrines as their national teaching. Therefore, it is necessary first of all to understand what makes up the principle of humanism in order to arrive at the central and vital point of Confucianism.

Jên,⁴ the Fundamental Virtue.

Every Chinese thinker agrees that man and nature are not mere accidents, that their existence can not be a haphazard affair, but that there is a Tao, that is, a way or norm, which is the regulator of human conduct and the guide of natural events. There was no dissenting voice among the thinkers so far as the existence of a Tao was concerned. What vehemently engaged them in discussion and controversy was the being or nature of the Tao. The issue was whether it was metaphysical or simply moral, whether it was transcendental or positivistic. The Taoists thought it was the former, while the Confucians adhered to the latter conception. The Tao, says Confucius, is no more than *jên*.

Now, it is very difficult to find a proper English equivalent for the Chinese *jên*. Broadly speaking, it is sympathy, or lovingkindness, or friendly feeling, or feeling of fellowship.

The Chinese character (仁 *jên*) is made out of the two

‘仁

component ideograms 人, man, and 二, two, and its signification is that there is an inborn feeling in every man's heart, which is awakened when he comes in contact with another fellow-being, forming the permanent band of association between them. This feeling, Confucius declares, is the foundation of society and the road to all human virtues. It is the Tao; it is the road which must be traveled by every social being; it is the door that must be passed through when going out (Analects, B. VI, 15) of the house. No moral being can live without this Tao, this road, for that which can be dispensed with even for a moment is no more the Tao. (Chung Yung, I.) Therefore, the Tao is the feeling of fellowship, and the feeling of fellowship is the Tao.

This fellow-feeling is the reason of the Golden Rule. Without it, one will not be kept from doing to others what one would not have done by others. (Analects, XII, 2; XV, 23.) For indeed the feeling is humanity itself. Says Confucius: "A man who has *jên*, wishing to establish himself, will have others established; wishing himself to succeed, will have others succeed." (Book VI.) The feeling of fellowship is the primary altruistic instinct of man, which in spite of his innate egoism drives him out of his narrow selfish limitations, and which seeks its own satisfaction through a negation, as it were, of himself. Confucianism does not believe in the innate baseness of human nature, that is, in its absolute egoism; but it asserts the existence in every human heart of an altruistic impulse. The latter is not a modified development of egoism, but inherent in humanity.

It is in this spirit that Mencius says, "Everybody has a feeling for others which he is unable to control. Suppose a child is at the point of slipping down into a pit. It awakens in the spectator a mingled feeling of apprehension and compassion, which urges him to an immediate rescue

of the child. This is not because he wants to incur a favor upon its parents. This is not because he wants to be honored by his friends or fellow-villagers. This is simply because he can not bear its pitiful scream. Men who have no feeling of pity, therefore, are no human beings." (Book III.) As Schopenhauer made sympathy (*Mitleid*) the foundation of his ethics, so the Confucians consider feeling of fellowship as the prime principle on which the grand edifice of human society is built.

All virtues spring from *Jên*. They are no more than the modifications of this fundamental feeling, as it comes in various ways or relations with the will, intelligence, desires, and impulses. The circumstances under which we move are ever changing, and our feelings respond to them accordingly, assuming thereby different names, such as loyalty, filial piety, courage, propriety, faithfulness, righteousness, longsuffering, and benevolence. Therefore, Confucius affirms that in his dealings with men and things he had only one principle (*tao*) to guide him (Analects, B. IV, 15); and that by this he meant no more than the feeling of fellowship, is confirmed by most Confucians.

Judging from the general trend of Confucianism, only two moral principles are possible: one is fellow-feeling or altruism and the other is egoism (cf. Mencius, Book VII). When our feelings do not go out to our fellow-beings, they are concentrated on our own selfish motives. When the latter sense is cultivated at the expense of the former, society falls into pieces and humanity is ruined, and the *raison d'être* of a moral being is lost. Mencius, therefore, says: "*Jên* (fellow-feeling) is man himself"⁵ (which is also pronounced *jên* in Chinese).

To quote Mencius again, "Fellow-feeling is the highest heavenly honor ever given to men. It is the safest abode ever secured for men. There is nothing that could check its

⁵ 仁者人也

course." (Mencius, B. VII.) Ch'êng-tze, a great philosopher of the Sung dynasty, says, "Fellow-feeling is the norm of the universe. When the norm is lost there ensues lawlessness and discord."⁶ Chou-Tze, another and later great Confucian, comments on *Jên*, saying, "*Jên* is the virtue of the soul and the reason of love."⁷ From these quotations, we shall be able to understand what an important position the theory of fellow-feeling occupies in the ethical system of Confucianism.

But it must be noticed that *Jên* was used by Confucius as well as by his disciples not only in its general and ultimate significance, but in its specific applications. To them, *Jên* meant not only the most fundamental ethical feeling innate in man, but its particular modification as it is practised in our daily life. Every reader of the Confucian Analects is well aware of the various senses in which the term *Jên* is used by the Master, and we may sometimes be at a loss how to arrive at a definite conception of it. But the fact seems to be that Confucius himself did not have a very clear analytical comprehension of his central idea. He was indeed conscious of one ultimate principle underlying all virtues generically known as *Jên*, as he declared that he was guided by only one principle in his daily conduct. But he applied the term *Jên* rather indiscriminately to this principle as well as to its practical specifications. Hence the apparent confusion in which *Jên* is used in the Analects.

Dr. Y. Kaniye enumerates in his contributions to the study of Confucius (p. 297) the five different shades of meaning given to *Jên* by the Master, which are (1) prosperity,⁸ (2) kindheartedness,⁹ (3) charity,¹⁰ (4) sincerity and sympathy,¹¹ (5) unselfishness¹² (or self-control). When

⁶ 仁者天下之正理 失正理則無序而不和

⁷ 仁者心之德愛之理 ⁸ 利澤 ⁹ 重厚 ¹⁰ 慈愛

¹¹ 忠恕 ¹² 克己

the Chinese speak of three or five cardinal virtues, *Jên* must be understood in its specific sense.¹³

Now, the question is, "How are we to cultivate fellow-feeling and put it in actual operation in our every-day life?" This is the gist of practical Confucianism, and the moral efforts of its followers are concentrated on it. Even the Master himself did not claim to have brought his fellow-feeling into perfect development, and naturally none of his three thousand disciples were said to have attained to it. But Confucius declared toward the end of his life: "I behave myself as my heart desires, yet it never transgresses the mean." (Analects, B. II, 4.) Here he may be said to have reached the state of perfect adjustment between natural impulses and moral discipline. He is now *Jên* itself. He has no scruples, no hesitancy, no deliberation as to what would be his proper conduct under certain conditions. He is no longer hampered by any improper thoughts and impulses. When a person reaches this stage, he is said to be a sage, or holy man (*sêng jên*),¹⁴ and Confucius, according to the Chinese, fully deserves this title. He behaves as freely and innocently as a child fresh from the bosom of nature, and all that he does never deviates from the Middle Way (*Chung tao*).¹⁵

Reverence and Self-Inspection.

Let us now approach the question: "By what means could one reach this pinnacle of moral perfection?"

According to Confucius, *Ching*¹⁶ or *Kung*¹⁷ is the road that finally leads to the perfection of humanism and to the full development of fellow-feeling. It is a reverential attitude of a moral person toward his own being. Etymolog-

¹³ The three cardinal virtues are: wisdom (*chi*) 智, humaneness (*jên*) 仁 and courage (*yu*) 勇. The five virtues are: humaneness (*jên*) 仁, righteousness (*i*) 義, propriety (*li*) 禮, wisdom (*chi*) 智, and faithfulness (*shên*) 信.

¹⁴ 聖人

¹⁵ 中道

¹⁶ 敬

¹⁷ 恭

ically, *Kung* is made up of "heart" and "many hands," which latter means "together" or "conjoined." It is a state of mind prompting reverential deportment. *Ching* which is made up of "carelessness" and "tapping," means self-restraint, self-respect, deliberation, gravity, and dignity. *Ching* and *Kung* are generally used together to make the one clearer and more definite by the other. But, separately, *Kung* is more of the outward deportment and *Ching* of the inner feeling. When the feeling is carefully nourished and purified within, and the outward manners are deliberately trained, the egoistic impulses are gradually subdued and the altruistic sentiment proportionately grows until the time comes when the sentiment and the impulses are thoroughly harmonized.

The Confucians have no personal God that directly takes charge of the human soul. They do not appeal to any outward object to be elevated in their moral life. They concentrate all their spiritual efforts on themselves to develop from within what they possess by their very nature. They endeavor to be modest in their self-asserting claims. They keep themselves well guarded against any possible intrusion of evil, inhuman thoughts and impulses. They inspect themselves closely to see whether anything that is not of fellow-feeling is being stirred in them. They move about very deliberately and reverently not to let loose any evil, selfish impulses, which they might innocently awaken in themselves. Therefore, Confucius says, when asked how *Jên* should be practised: "When you are away from home, behave yourself as if receiving a great personage. When employing people, behave yourself as if assisting at a great sacrifice. Do not do to others what you would not have others do to yourself." (Book XII.) This is tantamount to saying, "Keep yourself always in a reverential mood, and let not your hasty and improper passions take hold of you." In reply to his favorite disciple, Yen

Hui, Confucius says: "Overcome your egotism and return to propriety (*li*).¹⁸" When asked for further details, he added, "Do not see anything that is improper. Do not listen to anything that is improper. Do not speak anything that is improper. Do not move towards anything that is improper." (Book XII.) According to these injunctions, the Confucian method of maturing a feeling of fellowship is to give the necessary psychological time to all the impulses, so that when the first storm of emotional agitation is over, the mind will be in readiness for proper adjustment and action. When this practice is repeated with the whole heart and with sufficient frequency, one's deliberate moral judgments and headstrong natural impulses will finally be adjusted, any feeling or thought that is improper and inhuman being perfectly subdued and all that is of fellow-feeling being matured to its full strength.

*Sincerity (chêng).*¹⁸

Thus it will be evident that the first step which a man must take to realize and perfect a feeling of fellowship, is to guard himself in his solitary moments, that is, to be sincere with himself, not to play the hypocrite, and to freely manifest the feeling as it moves within.

So we read in The Great Learning¹⁹ (Chap. VI): "By being sincere in all one's soul-activities (*i*)²⁰ is meant that one should not deceive oneself as in disliking an offensive odor or in being attracted by a beautiful color. This is called being sufficient unto oneself. Therefore, the superior man must ever be watchful over the self in his solitary moments.

"There are no evil things which the mean man in his retired moments would shrink from doing. But when he sees a superior man he becomes deceitful, trying to cover his evils and to manifest his goodness, although others can

¹⁸ 誠 ¹⁹ 大學 *Tai Hsiao*, one of the four books of Confucianism. ²⁰ 意

recognize him as if looking into their own lungs and livers. What then is the use [of trying to hide evil thoughts]? This is to say that whatever is really within yourself will be manifest without. Therefore, the superior man must ever be watchful over the self in his solitary moments."

And again in the *Doctrine of the Mean*:²¹

"The Tao is not a thing that could be done without even for a moment. What is done without is not the Tao. Therefore, the superior man is ever watchful over himself even when he is not heard. Nothing is so manifest as that which is hidden; nothing is so conspicuous as that which is invisible. Therefore, the superior man is ever watchful over the self in his solitary moments."

Evil thoughts are more ready to creep into one's heart in his solitary moments than at any other time; improper impulses find his ear more prepared than at any other time for their whisperings. Be deliberate and scrupulous, watch over yourself religiously, when you are alone. This is the way to be sincere to yourself and to avoid all improper thoughts that are not in accord with the tender, loving, self-sacrificing fellow-feeling. "Sincerity (*chêng*)²² is the heavenly way, and to be sincere (*chêng chih*)²³ is the human way,"—so runs the declaration of Confucius. *Jên* then naturally came to be identified with sincerity of heart, and how to be sincere with oneself became a paramount issue with later Confucians.

That the doctrine of sincerity is to be developed from the Confucian conception of fellow-feeling is quite natural. Admit the existence of an altruistic impulse in man, and also admit that this impulse could be matured into a constant, ruling, central and animating moral emotion through a systematic training, and that the discipline consists in maintaining a habitual reverential attitude toward one's own moral personality; and the natural course of develop-

²¹ *Chung yung*, 中庸, another of the Four Books. ²² 誠 ²³ 誠之

ment in practical Confucianism will be the doctrine that one should guard oneself against the arrogance of self-assertion in solitary moments, when all external inhibitory forces are absent. This self-examination or self-introspection will gradually unfold the sense of moral dignity, naturally associated with which is the desire to be sincere to oneself as an ethical personality. Through sincerity now one's moral value will be positively appreciated, the altruistic feeling will be developed so as to regulate the egoistic within its reasonable limits.

Thus, the *Chung Yung* (Doctrine of the Mean), generally considered to have been written by the Master's grandson and the teacher of Mencius, rather systematically advances the doctrine of sincerity which is the doctrine of the mean. The author Tze Sen seems to have been a more synthetic intellect than his Master, and his doctrine of sincerity is comprehensive. We read in the *Chung Yung*:

"Intelligence unfolding through sincerity is Essence (*hsing*).²⁴ Sincerity reached through intelligence is Religion (*chiao*).²⁵ When sincerity is attained intelligence is attained; when intelligence is attained, sincerity is attained." (Chapter XXI.)

"It is only through the perfect sincerity of the universe that Essence is thoroughly comprehended. When Essence is thoroughly comprehended, the essence of humanity is thoroughly comprehended. When the essence of humanity is thoroughly comprehended, the essence of things is thoroughly comprehended. When the essence of things is thoroughly comprehended, one can assist heaven and earth in its evolutionary work. When one can assist heaven and earth in its evolutionary work, one can be said to be occupying the same rank as heaven and earth. (Chapter XXII.)

²⁴ 性

²⁵ 敬

"Sincerity works by and through itself; the Path leads by and through itself. Sincerity is the end and the beginning of things. Without sincerity no existence is possible. Therefore, sincerity is most honored by the superior man.

One who possesses sincerity makes perfect not only himself, but others. That which makes the self perfect is humanity (*jên*), that which makes others perfect is intelligence. These are the virtues of the Essence, and the way leading to the unity of the internal and external. Therefore, there is not a moment when they are not exercised in the fitness of things. (XXV.)

"Perfect sincerity never ceases working. The reason of heaven and earth can be comprehended in one word. What makes the reason is not dualistic, and therefore it knows no limits in the creation of things; the reason of heaven and earth is wide, solid, high, bright, far-reaching, and everlasting." (XXVI.)

According to this, the Tao is identified with sincerity (*ch'êng*), for it is sincerity that works out the transformation and constant growth of the ten thousand things, and that completes and guides the course of the universe. Without sincerity no being could come to existence, no change or transformation could take place. Sincerity is law, constant in its work. It composes the essence of human being. All moral qualities grow naturally from the cultivation of this fundamental virtue. Be sincere to yourself, be sincere to your own true nature, and above all be sincere to the laws of the universe that make the ten thousand things grow and regulate the concatenation of the four seasons.²⁶ For sincerity is the essence of human being. For it is humanity itself.

²⁶ Confucius once said (Analects, Book XVII): "I wish to keep silence." Tze-kung, one of his eminent disciples, who was surprised at the Master's remark, said: "If the Master keeps silence, what shall we, humble disciples, have to record?" Confucius said: "What does Heaven ever speak? The four seasons come in turn, and all things grow. Does Heaven ever speak?" There are certain well-regulated laws in the universe which pursue their course

In concluding this paragraph on sincerity, it may be remarked that the Kantian precept of morality, "so to will that the maxim of thy conduct can become a universal law," had been most explicitly foreshadowed long before his time by one of the most representative Confucians, the author of the *Chung Yung*. There are some cosmic laws pervading and regulating all things, which, when subjectively interpreted, are no more than sincerity. Man as a moral and rational being must conform himself to these laws, must be sincere to himself, must work out what his inner reason or altruistic feeling of fellowship dictate, for these dictates are no more than cosmic laws themselves issuing from the sincerity of heaven and earth. Therefore, "the superior man moves so as to make his movements in all generations a universal path; he behaves so as to make his conduct in all generations a universal law, he speaks so as to make his words in all generations a universal norm." (XXIX.) Why? Because "the way of the superior man never errs: have it applied to himself, or have it bestowed upon the masses of people, or have it judged by the [ancient] three sage-kings, and it never errs. Have it established in heaven and earth, and it never violates; have it examined by all spiritual beings, and its truth is never doubted; leave it to be sanctioned by holy men after a lapse of one hundred generations, and yet no uncertainty remains [as to its verity]."

Mencius.

The development of the Ante-Ch'in Confucianism must be said to have attained its consummation in Mencius, who was the best representative interpreter of his master. Indeed, were it not for his most brilliant defense and upholding of the system, it would perhaps never have enjoyed

without demonstration. Find them in our own hearts, and sincerely follow them as they dictate. This is the Confucian common-sense intuitionism.

its triumphal progress throughout the long subsequent history of Chinese thought.

In his days there were many different doctrines propounded by able original thinkers, each of which struggled to gain the upper hand over the others. Confucianism did not thrive any better than other systems, and if it failed to have such a brilliant and masterly personage as Mencius among its followers, it would have fared quite differently. Mencius did to Confucianism what Chwang-tze did to the philosophy of Lao-tze, and in many respects each disciple typically represents the doctrine that his master had so eloquently expounded.²⁷

What Mencius contributed to Confucianism is his doctrine of the essential goodness of human nature. This was a natural sequence from the conception of fellow-feeling and that of sincerity. Grant that every man is endowed with an altruistic impulse called by Confucius "feeling of fellowship" (*jên*), that this could be developed and matured by reverence and sincerity which finally keep under restraint all impetuous, self-disgracing, egotistic impulses and desires, and that it is by and through sincerity, as is most explicitly stated in the Doctrine of the Mean, that the movement of the heavenly bodies is made possible, the cycle of the four seasons, the growth and transformation of all living things on earth, the existence of natural and moral laws which bind together all beings animate and inanimate

²⁷ When we scan their works, the character of each looms up with great clearness and definiteness. One is dignified in mien, deliberate in speech, and stately in movement; the other, quite opposite to this, is free and unrestrained in every way. We can mentally picture one donning a golden robe with the embroidered figures of dragon and phoenix, and sitting on a throne bedecked with all kinds of brilliant gems, and presiding over an assembly of noblemen, who reverently bow before his august personality which is singularly tempered with humane expression. The other, however, might be imagined as swinging himself in a rustic hammock among luxuriant summer greens, his old, almost thread-bare dress loosely hanging about him, and with an expression which hardly betrays a trace of earthly concern, when his eyes are rapturously raised toward a drifting cloud in the distant sky. What a pitiful fate it was that these two geniuses possessing peculiarly contrasted characters, but both endowed with unusual dianoetic power and living contemporaneously in the same land, never chanced to see each other!

in a harmonious whole. "What then is this sincerity?" may naturally be asked. Being a practical moralist, Mencius did not speculate on the problem from the standpoint of a metaphysician. He did not think of a sort of cosmic mind that might be existing in heaven and earth and regulating things in sincere conformity with its essential goodness. But he reflected within himself: As long as it is sincerity that keeps order in nature and society, sincerity must be said to be synonymous with harmony and goodness. Man as essentially a manifestation of sincerity must be good in his nature. If otherwise, how could he develop any virtue at all within himself? How could being sincere to his nature be considered the height of morality? Man must be essentially good in his nature, as he cannot develop from within what he is not naturally endowed with.

Mencius thinks that it is human nature to be good, just as it is the nature of water to seek its level, or as it is the nature of the willow tree to be pliable and elastic.

Kao-Tze²⁸ said, "Nature is like a running water: when it is turned eastward, it flows eastward; when it is turned westward it flows westward. Human nature has no choice between good and not-good as water has no choice between east and west." To this, Mencius replies, "Truly, water has no choice between east and west, but has it no choice between up and down? The goodness of human nature is like water seeking the lowest level. There is no man who is not good, there is no water that does not seek its lowest level. Now, that water when whipped and tossed could be passed over one's forehead, or that when arrested and driven in another direction, it could be made to go over a hill, is not in the nature of water. It is due to the force of circumstances. Man could be made to do not-goodness, for his nature is as susceptible as water." (Book XI.)

²⁸ Kao-Tze seems to have been a philosopher contemporary with Mencius. He did not leave any work of his own, but in many ways he seems to have taken issue with Mencius on the subject of human nature.

Further below in the same book Mencius gives the content of goodness when he says: "Man's impulse is to do good, for his nature is good. That he does not do good is not the fault of his natural faculty. A feeling of sympathy, everybody has it; a feeling of shame, everybody has it; a feeling of reverence, everybody has it; a sense of discrimination, everybody has it. The feeling of sympathy²⁹ is humaneness (*jên*); the feeling of shame³⁰ is justice (*i*); the feeling of reverence³¹ is propriety (*li*); and the sense of discrimination³² is intelligence (*chi*). Humaneness, sense of justice, propriety, and intelligence are not what is molded into us from without. They are inherent in us, only that people are not conscious of them.

"Therefore, a man without a feeling of sympathy is not human; a man without a feeling of shame is not human; a man without a feeling of deference is not human; a man without a sense of discrimination is not human. The feeling of sympathy is the starting-point of humaneness; the feeling of shame is the starting-point of justice; the feeling of deference is the starting-point of propriety; and the sense of discrimination is the starting-point of intelligence. A man has these four starting-points as he has four limbs; and those who, having these four starting-points, plead incapability are mutilating themselves." (Book III.)

Of these elementary moral sentiments making up the content of goodness, Mencius seems to have thought the first two, humaneness and righteousness (or justice), to be more fundamental than the other two; for he says (Book XI): "Humaneness is the human heart, and righteousness (or justice) is the human way. I pity those who digressing from the way do not walk in it, and those who abandoning the heart do not know how to regain it." Again (Book XIII), when he was asked what was the work of a scholar, he replied that it consists in the ennoblement of

²⁹ 惻隱³⁰ 羞惡³¹ 辭讓³² 是非

his mind. When further asked, he said: "It is no more than [the cultivation of] humanheartedness (*jên*) and righteousness (*i*). It is not humanhearted to kill even a single innocent being; it is not righteous to take what is not one's own. Where is our abode? Nowhere but in humanheartedness. What is our way? Nowhere but in righteousness. To abide in humanheartedness and to walk in righteousness, here lies the consummation of a great man's work."

Lastly, in Book XIV, Mencius repeats that "Every man has a feeling which he is unable to endure for others, and humanheartedness consists in extending this feeling even to things you can endure for others. Every man has a thing which he dares not do to others, and righteousness consists in extending this to things you can dare do to others."

From this, it can be seen that Mencius proposes two fundamental moral sentiments, humaneness or humanheartedness and righteousness, both of which are differentiations of the Confucian feeling of fellowship, or rather two phases of it. The Mencian *jên* is the affectional and esthetic aspect of the Confucian *jên*, while his *i* is its volitional and ethical aspect. One is love, grace, and subjective, while the other is duty, moral "ought," and an objective consideration for others. One is the expansion of the altruistic feeling, and the other is the inhibition of egoism, and thus each complements the other.

Thus, the Confucian fellow-feeling has undergone through Mencius a more analytical consideration and developed the teaching of his master into the form in which it has been handed down to posterity.

Though Confucianism can be said in a sense to be the Chinese philosophy and ethics, there were not lacking, especially in the Ante-Ch'in period, some other ethical teachings which were vigorously contesting supremacy

with Confucianism, and among them we can mention the Taoist Yang-Tze, Mu-Tze, and perhaps Hsün-Tze. Let us first expound the ethics of Laotzeanism, or Taoism as it is commonly designated.

ETHICS OF TAOISM.

The Wu Wei.

The Taoists were no doubt better metaphysicians but poorer moralists than the Confucians. Their system of moral teachings may be called negativistic egoism. For their main principle of conduct is to enjoy the bliss of life in a quiet solitary retirement, free from all worldly cares and relations, and by devoting all their time to a serene contemplation of nature in its absolute, eternal aspect, and not in its ever-struggling, ever-becoming activity. They are not selfish in the sense that they want to assert their own egotistic will over that of others. In fact, they strongly advocate the doctrine of non-resistance (*pu chêng chih tê*)³³ but they practise this not because of the general welfare of humanity but because of their own preservation and happiness and peace. Let people do whatever they like, and let them assert their own egoism in defiance of our own, but in the end they will be their own destroyers. For their egotism, instead of hurting non-resisting innocents, recoils upon themselves, as egotism is the moral boomerang. Lao-tze teaches: Let others have precedence, and lo! I am preserved. Or, in his own words: "The holy man puts himself behind and he comes to the front. He surrenders himself and he is preserved. Is it because he seeks not his self? For that reason, he accomplishes his self." (Chap. VII.) Here is the gist of the whole Taoist ethics.

When the Taoists are said to be egotistic, it is not

³³ 不爭之德

meant that they are grossly materialistic egotists who unblushingly affirm their hedonistic impulses. Far from it; they are harmless innocent recluses, who have no other desire than to be left alone, in order that they may continue their undisturbed meditation in a solitary cell. They have no particular desire either on this earth or after death. But they esteem for one thing their own self above all other things. They have no desire to sacrifice their all-precious self for the happiness of others. Indeed, they do not hanker after any worldliness, and have no craving for the vanity of vanities that is doomed to pass. But they seem to have cared very much for personal immortality, not after death but in this life. Lao-tze, Chwang-tze, and Lieh-tze all had a very exalted view on this matter. They intuitively knew that this life as it is lived is a manifestation of the Absolute and as such immortal, and, therefore, that there was no need of seeking immortality after death. The later Taoists, however, could not understand this mystic conception of life and immortality, and naturally upheld a corrupted, degenerated, and distorted view of immortal life on this earth. Some of the later Taoists even claimed that they knew the secret of preparing the elixir of immortality, which had first been discovered by their venerable master Lao-tze and transmitted guardedly through generations. This was the first great loophole through which the Taoists gradually fell into a hopeless system of crass popular superstitions.

The backbone of the Taoist egoism is *wu wei*.³⁴ This term is generally rendered by non-action, while non-assertion³⁵ in many cases gives a more correct sense of the original. *Wu wei* does not mean sitting idle and doing nothing. It means not to interfere with others' affairs.

Says Lao-tze (Ch. II): "Therefore, the holy man conducts his affairs with non-assertion; he practises the doc-

³⁴ 無爲

³⁵ This is Dr. Carus's term for *wu wei*.

trine of silence. All things are working and he does not refuse [to work with them]. All things are born [and so is he], but he does not claim ownership; all things are achieving [and so is he], but he is not presumptuous. His merits are accomplished, but he does not dwell in them."

Again, in Chapter LXIV: "He who asserts is defeated; he who seizes suffers loss. The holy man asserts not, therefore he is not defeated; he seizes not, therefore sustains no loss. People fail when they are nearly at the point of accomplishing the work they have undertaken; if they were as cautious in the end as in the beginning, they would be saved from failure. Therefore, the holy man desires not-desiring, prizes not the treasure that is unobtainable, learns not-learning, retires where the masses pass by; and thereby he assists in the natural development of all things, but he never dares asserting."

The doctrine of *Wu Wei* is in its passivity the ethics of femininism. It teaches submissive humiliation, moderation, meekness, and often nonchalance; though, according to Lao-tze, these things are not prized for their intrinsic virtue, but as the means of attaining the end of self-preservation or self-affirmation. "I do not dare assume lordship, but the position of a guest. I do not dare advance an inch but retreat a foot." (Ch. LXIX.) "Man is tender and weak at his birth, he is stark and rigid when dead. All things and grasses and trees are tender and feeble at their birth, but when dead they are dry and sear. Therefore, those that are stark and rigid are followers of death. Those that are tender and weak are followers of life. Therefore, a strong army does not win, and a strong tree grows to decay. The strong and great are cowered, the tender and weak are uplifted." (Ch. LXXVI.)

And again in Chapter LXXVIII,³⁶ says Lao-tze,

³⁶ Cp. Ch. XLIII. "The weakest under the heavens chases and drives the hardest under the heavens, and there is no space where it does not penetrate. For this reason I know the usefulness of not-doing (*wu wei*)."

"There is nothing under the heavens that excels water in tenderness and weakness, yet there is nothing that surpasses it in efficiency when attacking the hard and strong. This is known to everybody that the strong is conquered by the weak, that the rigid is conquered by the tender."

In spite of this emphasis placed on passive and negative egoism, the ethics of Lao-tze is not lacking in noble thoughts such as characterize Buddhism and Christianity. By these I mean such passages as the following: "The holy man has no fixed thought of his own, he makes the wishes of his people his own. Good ones I meet with goodness; not good ones I too meet with goodness; and thereby I gain goodness. Faithful ones I meet with faith, not faithful ones I too meet with faith; for thereby I gain faith." (Chap. XLIX.) "Requite hatred with virtue." (Chap. LXIII.) "I have a triple treasure. I hold this very precious. The first is compassion, the second is moderation, and the third is not to come in front before the world." (Chap. LXVII.)

Anarchism.

Lao-tze's doctrine of passivity, when positively stated, is to let things follow their own natural bent without any interference from outside. Masses have an inherent tendency to gravitate toward the center of the earth; men have an inborn desire to follow the course of the Tao, which is in them. Therefore, let them alone, do not yoke them with unnecessary rules and formalities. Things that are imposed from without acquire unnaturalness so that they are inevitably crippled. Lao-tze thus exclaims: "The more mandates and laws are enacted, the more there will be thieves and robbers." (Chap. LVII.) And Chwang-tze agrees with him by saying that, "if an end were put to sageness, and wisdom put away, the great robbers would cease to arise; if jade were put away and pearls broken to

bits, the small thieves would not appear." (Part II, sect. III, "Chü Chieh.") To quote Lao-tze again: "When the great Tao is obliterated, we have humaneness and righteousness. Prudence and circumspection appear, and we have much hypocrisy. When family relations no longer harmonize, we have filial piety and parental love. When the country and the clans decay through disorder, we have loyalty and allegiance. Abandon your saintliness, put away your prudence, and the people will gain a hundred-fold. Abandon your humaneness, put away your righteousness, and the people will return to filial piety and paternal love. Abandon your scheming, put away your gains, and thieves and robbers will no longer exist." (Ch. XVIII.)

These are strong words and smack not a little of anarchism. In truth, when the ethics of Lao-tze is carried out to its logical extreme, it results in nothing but absolute anarchism. The Taoist metaphysicians of the Ante-Ch'in period unanimously advocate the doctrine of non-resistance and non-interference. They want to return to the primitive stage of civilization, when there were no laws or regulations whatever. Everybody is supposed by them to have then enjoyed the utmost individual freedom and to have been as yet unconscious of abusing it at the expense of another. History, however, does not prove that there was such a golden age in the remote past, but that, on the contrary, the struggle for existence among various tribes as well as within one and the same tribe was a universal phenomenon. But the Taoists refused to take notice of the fact; probably they took it for granted, as many other Chinese thinkers did, that there existed a universal peace and unbounded happiness in prehistoric times. Even if they might have been induced to doubt it in one way or another, they were willing to ignore it, in order that they might remain charmingly spellbound by imagination and vision-

ary retrospect. An anarchistic state of things was thus made their highest ideal of individual as well as social life.

The following allegory culled from the Chwang-tze (Part II, Sect. VII) very ingeniously illustrates the significance of *wu wei* in the Taoist ethics: "The ruler of the Southern Ocean was Shu, the ruler of the Northern Ocean was Hu, and the ruler of the Center was Chaos. Shu and Hu were continually meeting in the land of Chaos, who treated them very well. They consulted together how they might repay his kindness and said: 'Men all have seven orifices for the purpose of seeing, hearing, eating, and breathing, while this ruler alone has not one. Let us try and make them for him.' Accordingly they dug one orifice in him every day; and at the end of seven days Chaos died." Poor Chaos! If he were left in his chaotic, undetermined, undifferentiated, and, therefore, necessarily inactive (*wu wei*) condition, which was indeed the *raison d'être* of his existence, he could enjoy a life of eternity and of perfect contentedness too. The unnecessary, though quite well-meant, interference of his neighbors permanently put an end to his very existence.

Whatever the Taoist world-shunning ethics, it was a creation of the Chinese mind after all. It never lost sight of its practical import; that is, it always showed a considerable interest in politics and state-administration. The reader might imagine that an ethical doctrine such as that of Lao-tze would not trouble itself with political affairs, which are merely a product of the worldly wisdom and artificiality despised so strongly by the Taoists. But no Chinese philosopher and moral teacher would ever think of ignoring the practical consequences of his theory. Indeed, the value of a theory had to be judged by its working utility in the daily life of man as an individual and as a member of society.

Lao-tze's theory with regard to the administration of

state affairs, as can be expected, was a direct, unmodified application of his *wu wei*, and might be called a *laissez faire* policy. Give the people as much freedom as they want; let them not be encumbered with artificial formalities and excrescent regulations; leave them alone as much as possible; if necessary, deprive them of all craftiness, cunning, prudence they have acquired since the initiation of artificialities, and lead them to a state of primitive innocence and absolute artlessness. This policy, according to Lao-tze, is understood to secure the peace and good order that used to prevail in the olden times of "cord-knotting" administration. The people would be delighted with whatever they have, simple and plain. They would die natural deaths when they were old. The cocks and dogs would happily voice their perfect contentment all around the country. And here we have a perfect state of things that ought to exist when the natural course of the Tao is faithfully followed. (Tao Teh King, chap. LXXX.)

The reader will here notice how radical is the difference between the ethics of Confucius and Lao-tze. Some sinologists ascribe this difference to climatic variation, the former representing the type of vigorous, industrious, and order-loving Northerners, while the latter that of care-free, visionary, impulsive, and often indolent Southerners. Under the pressure of the rigorous climate and inclement weather, the Northerners have to fight hard against nature. With them the letting-alone policy will result in the annihilation of their own existence. But the case is entirely different with the Southerners, To them nature does not mean a force that is unfavorable to them and therefore to be conquered. On the contrary, she is so bountiful that they can enjoy fulness of life with hardly any toil. Non-resistance and non-interference are the best policy whereby they can deal with nature. For this reason, Confucius can be said to represent the Northern type and

Lao-tze the Southern. The history of Chinese thought is no more than the record of the struggles between these two rival conceptions, Taoism aided by Buddhism and frequently joined by popular superstitions, and Confucianism generally strongly proving to be the more representative and indigenous to the Chinese mind.

HEDONISTIC EGOISM.

The most rigorous expounder of a hedonistic egoism in the history of Ante-Ch'in philosophy was Yang-tze. He seems to have been very influential at times, and his doctrine exhibited a considerable force against Confucianism, and if it were not for the eloquence of a great genius like Mencius, it might have been able to defy its opponents for a long while yet. Yang-tze's doctrine proves to what extent the negativistic egoism of Lao-tze can degenerate. Properly speaking, Yang-tze was not a philosopher at all. He was an eccentric soul, perhaps mortally wounded by some political disappointment and wrongfully guided by his natural pessimistic bent. His doctrine, if it be so called, was not a mature result of serious reflection, but rather the incoherent utterance of a mind cruelly in despair at the outlook of humanity. But the tolerance, nay, the popular acceptance which was accorded to the wild explanations of Yang-tze, proves the Chinese minds in this period to be fertile, versatile, and ready to take up anything novel. Yang-tze's existence was at all possible only in those days. Had he appeared a few hundred years later, his sayings would have been forever buried in oblivion.

Yang-tze, or Yang-Chou³⁷ as he is sometimes called, did not leave any work of his own. Perhaps he did, but we know no existence of it now. All the data we have to-day of his life and utterances are contained in the Lieh-tze, the Mencius, the Chwang-tze, and the Han-pi-tze. From

³⁷ 楊朱

these it appears that Yang Chou was a younger contemporary of Lao-tze, and from him he seems to have received some instruction concerning life and virtue, which was somehow similar to that given to Confucius. It is, therefore, but natural that we can trace in Yang Chou's hedonism a distinct echo of Lao-tze's ethics of self-complacency. In the latter was a prevailing tone of quiet negativism, but in Yang Chou we have a positive insistence on ultra-egoism. Sharing with Taoists in ascetic spirit, he did not teach sensual debauchery as a principle, yet what he is regarded to have taught verges dangerously near it, and in some cases can be said to be practically amounting to the same. There is no reason, however, to believe that the author himself was a man of loose morals and easy virtue. He was no more than a recluse himself, disgusted with the world and its artificialities. And he was a satirist too. When he is seen in this light, his doctrine is not so offensive and despicable as charged by the Confucians.

The ground principle of Yang-tze's egoism³⁸ is, negatively, to shirk all the artificial restraints that are calculated to bridle the natural impulses of man, be they high or low, and, positively, to let him go back to a state of primitive naïveté and enjoy his blessed life to the full extent of his emotional capacity. Yang-tze, therefore, looks down at the Confucian doctrine of humaneness and righteousness as something forced upon human nature and not innate to it. The object of life is not to yoke ourselves to moral pillories such as were imposed by the Confucians, merely in order that posterity might have a good opinion of us. The object of life is to give the freest rein to our nature and gratify it to the utmost. For is not life short? and is not this short life even encumbered with all kinds of care and worry? Subtract from a man's life the years of

³⁸ What follows is condensed from Lieh-tze's work in which there is a chapter exclusively dealing with the views of Yang Chou.

babyhood and senility, and its half is gone. Then take away hours of sleep, and there remains only one-fourth of the entire length of our life, which rarely reaches the one hundred-year mark. But is this one-fourth filled with unalloyed joy and happiness? By no means, for are there not so many unnecessary things that threaten to cut off even this remaining fraction of life? Desires are consuming our corporeal strength; social traditions are crippling our moral simplicity; national prejudices are strangling freedom of action; laws and regulations are muzzling the expression of natural sentiments. Under these intolerable encumbrances how could we spend lightheartedly even the mere fraction of life that is granted to us? Therefore, says Yang-tze, let us abandon all things that are external and superfluous, and let us enjoy our natural, unhampered life to its full limits. People of olden times were perfectly aware of the shortness of life and wanted to make the best of it. They lived as dictated by their simple, innocent impulses. Their desire was to preserve the naïveté or integrity of their nature. They never worried themselves about things earthly. They never distorted or mutilated what they obtained from heaven merely for the acquisition of things artificial. They were above political intrigues, aspiration for fame, commercial greed, and other petty human concerns.

This self-abandoned indifference and transcendentalism distinctly echoes the teaching of Lao-tze. But Yang-tze was not a mere quietist. He sometimes actually endorses debauchery of the worst kind. His almost unconditional egoism does not allow him to extend his sphere of interest either to his fellow-beings that are thriving around him or to those that are to come after him. He is utterly indifferent to matters concerning others. He stands absolutely alone. He does not condescend to identify himself with other fellow individuals. Therefore, he scoffs at such

men of virtue as Shun, Yü, Chou Kung, and Kung Fu Tze (Confucius), who are universally revered by the Chinese;—he picks them out as examples of most unnatural men that worried and deformed themselves merely for the sake of a good name. Yang-tze, on the other hand, praises Chou and Chieh—the type of infamy and depravity—as men who had courage and even virtue to behave as their natural impulses dictated. What did it matter to them if they now stand for everything that is disgusting in man? They who are so vehemently condemned by posterity as well as such virtuous men as Shun and Confucius,—are they not all gone forever and aye? Are not their bones crumbling, their flesh and blood already mingled in the dust? Let posterity say of them whatever it pleases, both the censured and the praised are absolutely insensible. Honor or dishonor, are they not like bubbles on water? Why not enjoy all that is enjoyable while alive? Begone! our doctrinaires, hypocrites, unnatural moralists, and vain aspirants after fame!

“How then should life be taken care of?

“Indulge in what your ears desire to hear; indulge in what your eyes desire to see; indulge in what your nose desires to smell; indulge in what your mouth desires to speak; indulge in what your body desires to obtain; and indulge in what your mind desires to do.

“Now, sound is what the ears desire to hear, and when it is denied to them, it means crippling the auditory sense. Things beautiful are what the eyes desire to see, and when these are denied to them, it means crippling the visionary sense. Perfume is what the nose desires to smell, and when this is denied to it, it means crippling the olfactory sense. Judgment is what the mouth desires to speak, and when this is denied to it, it means crippling intelligence. Delicious food and warm clothing are what the body desires to have, and when these are denied to it, it means

crippling the sense of comfort. Freedom is what the mind desires to have, and when this is denied to it, it means crippling one's nature.

"All these crippings are so many unnatural self-restraints, and he that has the fixed thought to do these, is molesting himself, is torturing himself. If you cast away the thought of self-molestation and lightheartedly and joyously indulge your passions and desires, and giving yourself up to the pursuit of pleasure calmly await the coming of death, your life of one day is equal to another's life of one month, and your life of one year to another's life of ten years. This is the way I take care of my life. Those who are yoked to the thought of self-molestation may have a long life of one hundred, ten hundred, even of ten thousand years, in a depressed state of mind, but what is the use of all that? It is not my way of taking care of life."

When judged from these passages alone, Yang-tze may appear a crass sensualist, a most vigorous libertine; but in other places we come across the typical Lao-tze doctrine of *Wu Wei* or the world-fleeing spirit of some Hindu philosophers.

"The reason why men are restive is due to four things: (1) longevity, (2) fame, (3) social position, and (4) wealth. People crave these things, and therefore they fear spiritual beings, their fellow-citizens, influences from unknown regions, and the punishment of the civil laws. They are called irrational and disobeying Heaven. Such people could be killed or saved at will by others, for they are not masters of themselves.

"Those who obey heavenly orders have no desire for longevity beyond the limit set by Heaven. They have no craving for fame as they have no thought of displaying their worth. They have no desire for social rank as they have no thought of abusing their power. They have no

desire for wealth as they are free from avarice. These people are called 'obedient.' The obedient people do not long for worldliness; they are independent, self-complacent; they are far above things earthly; they have destiny in their own hands and are free from all outward interference."

Taking all in all, he is not a debauchee but a self-contented, artless, simple-minded child of nature. He hates all kinds of inordinate excess and artificiality. He wants to live as he came from the bosom of eternity. He has not the slightest craving for sensual pleasures beyond the demands of nature. He feels hungry, and eats a morsel of coarse bread, and he is satisfied. He is cold, and puts on one more woolen tunic, and he is comfortable. He is a fatalist. He calmly greets death. He has no desire for immortality, either in life or after death. In these respects he deeply breathes the spirit of Lao-tze.

Whatever the merits and faults of his extreme doctrine, he occupies a unique position in Chinese philosophy. In his days and immediately after his death, he seems to have had quite a sway over the Chinese minds as we read in Mencius (toward the end of Book VI): "As a sage-king does not rise, the lords and dukes are unrestrained, private scholars are too liberal in their discussions, and the doctrines of Yang Chou and Mu Ti are pervading everywhere. When the general public is not swayed by Yang, it is swayed by Mu. The Yang asserts egoism, ignoring sovereignty; and the Mu asserts ultra-altruism, ignoring paternity. Without sovereignty and paternity, we all become lower animals."

UTILITARIANISM.

Almost all Chinese ethical doctrines are more or less characterized by a strong utilitarian tendency, for practicality is the key that opens one of the main entrances to

the Chinese mind. But there are, too, other moral traits predominant and peculiar to them. For instance, filial devotion is practically the corner-stone of later Confucianism; ceremonialism also occupies a conspicuous part in Chinese life; and lastly, there is a persistent assertion of conservative spirit in all their doings, and this spirit naturally makes the Chinese great lovers of peace. As all these racial characteristics have claimed their due consideration in the formation of their national system, their utilitarian tendency had to be modified to a certain extent. Therefore, it is a matter of self-evidence that we recognize in Confucianism a harmonious blending of all the predominant traits of the Chinese mind; for, otherwise, it would have been neglected like so many other doctrines, and would not have filled the position which it has held almost without an interruption since its first establishment. The doctrine I am going to consider, on the other hand, overlooked the importance of all the Chinese peculiarities other than utilitarianism and practicality. It unduly emphasized this phase, which necessarily resulted in an utter disregard of all the other things.³⁹ The doctrine is commonly known as an ultra-altruism in contradiction to the ultra-egoism of Yang-tze, but, properly speaking, its fundamental principle is no more than utilitarianism. It also contains many conceptions which are closely similar to Christianity, and it is very probable that if it were reared by a people who were more idealistic, imaginative, and above all religious, it could have developed a system almost like Christianity.

³⁹ Says Mencius (Book XIII): "With Yang-tze egoism is everything. Even when he could benefit other people by sparing one bit of his hair, he would not do that. With Mu-tze altruism is everything. If by rubbing himself from forehead to heel he could benefit other people, he would do so. Tze-Mo adheres to the mean. The adhering to the mean is nearer [to the truth]. But if, in adhering to the mean, the weights are missed to keep balance, it is just as bad as adhering to the extremes. The reason why the extremists are condemned is that they mutilate the [whole] Tao, that they raise one point [too high] at the expense of a hundred others."

The author of this interesting doctrine is Mu Ti.⁴⁰ Records vary as to his nativity and age, but the probability is that he was a younger contemporary of Confucius and flourished about the time when most of his immediate disciples were gone. His home seems to have been in the South and not in the North. He held an official position like every other learned man of the country. His work⁴¹ now in our possession consists of fifty-three books or chapters. Originally there were some more books in it. It seems most of the fifty-three books were written by his personal disciples after his death, but some of them are utterly unintelligible now, owing to some textual discrepancies and corruptions, and many desperate attempts were made to adjust them, though practically to no purpose. But the other parts are free from obscurity and show in many respects a clear logical mind on the part of the author, something unusual in Chinese philosophers.

The ideal of Mu Ti is universal peace and universal prosperity. Whatever his teachings, they are all intended to bring about this state of things. He declares that the business of the holy man consists in fostering peace among his people, in developing all the resources of nature, and in avoiding all the possible causes of evils that befall our community. It is wonderful to notice how modern are these views of the old Chinese philosopher Mu Ti. He asks: "Why is the existing state of things far from this ideal?" "Because," answers he, "everybody esteems his own self above others." The strong usurp the rights of the weak, the crafty take advantage of the ignorant, officers abuse their power over the unprotected, powerful states absorb the helpless. For these reasons, we are constantly in a state of war, individual with individual, family with family, clan with clan, and state with state. This cannot

⁴⁰ 墨翟

⁴¹ To my knowledge there exists no English translation of the work.

be the destiny of humanity as ordained by the will of heaven, which is our ultimate source of authority. Let one love another as one's own self, let a nation love another as its own, let a sovereign love his subjects as himself, let the son love his parents as himself, let everybody love everybody as himself. Then there will be no traitors who love themselves at the expense of the state to which they belong; there will be no tyrant who ignores the welfare of his subjects; no robbery, no enmity, no inhumanity; in fact there will be no evil that will disturb universal peace ensuing from this practice of universal love. (Chapter XiV and XV.)

How is the principle of universal love and mutual benefit justified? Mu Ti argues that there are three methods of testing the soundness of a principle. First, it must conform to the will of heaven and be in accordance with the doings of ancient sages; secondly, our daily experiences must justify it; and thirdly, when it is made into a law and practiced among the people, it must prove an agent for the general welfare. (Ch. XXXVI-XXXVII.) Mu Ti proceeds to prove all these points in this way. Heaven created the sun, moon, and innumerable stars. It regulates their courses and the four seasons follow in order. It sends forth thunder and lightning, rain and snow. Warmed by them the five cereals and other nourishing and useful plants grow. People avail themselves of these heavenly gifts. Again, there are mountains covered with all useful trees and stored with all wealth-producing metals. People transform them into their own service and make themselves comfortable in every way. Again, there are sovereigns and wise men specially favored by heaven. They make laws and administer to the needs of the people; the wicked are punished, the ignorant are made enlightened, and prosperity is secured. Do not all these things come from the will of heaven? Do not all these things come to

everybody without discrimination? Why, then, heaven must be considered the source of love and righteousness, and our duty on earth is but to follow this will and practice universal love and mutual benefit. (Chap. XXVII.) •

And was this not also the teaching and practice of the ancient sages?

Our daily experiences teach us the same lesson. Those who love are loved, those who hate are hated. If we benefit others, they are glad to return the favor; if we rob them of what is due to them, they will be ready to requite in a similar way. This is what we observe all around us. (Ch. XIV.)

If we make this heavenly will the principle of administration, the sovereign will be beneficent, the subject loyal, the father kindhearted, the child filial, the elder brother friendly, and the younger dutiful. Good or evil, the source of influence is from above. There was once a king who liked slender waists, and every woman in the state deprived herself of necessary food. There was another king who delighted in muscular strength, and every youth in the state devoted himself to all kinds of athletic exercises. Therefore, nobody can tell to what extremity the masses will rush when an example is shown by the privileged classes. Let the sovereign and his officers exercise the will of heaven as is manifested about us, and the entire nation will at once follow suit. Universal peace and eternal prosperity will then inevitably be the outcome. (Chap. XV.)

The real issue of Mu Ti's doctrine, however, seems to lie more in its utilitarian aspect than in its humanistic side. This can be seen from his economic views which brought about the vehement accusations⁴² of the Confu-

⁴² "The refuting of the arguments of Yang and Mu should be like the taming of the wild hogs. After they have been put in a pen, they should be bound fast." (Mencius, Book XIV.) In another place (Book VI) he again compares them to the lower animals.

cians resulting in the final downfall of his whole system. He rigorously opposed the prevalence of luxurious habits as to dwelling, clothing, eating, and traveling; and he also condemned the custom of concubinage. They are all the unproductive consumption of wealth; so much is spent and nothing material is gained thereby. The real happiness of the masses does not consist in the encouragement of luxury but in the production of wealth.

The custom of concubinage naturally results in the overproduction of bachelors as well as old maids,—the fact will eventually threaten the growth of population.

On the same ground, Mu Ti objected to the Confucian sentimentalism. The Chinese always cherished a very deep reverence for their ancestors and lost no opportunity to show the feeling in public. Their burial ceremony, therefore, was naturally of the most elaborate character. There was a strong tendency among the poor as well as the rich to go beyond their means, in order to express or make a show of the deepest reverence and sympathy for their deceased. We learn from modern travelers that there are in China some professional mourners who are hired by real mourners to make their funeral procession appear more mournful by their simulating show of lamentation. The Chinese of olden times perhaps did not take such an extreme step to make a public exhibition of their grief; at least we are not in possession of any documents to prove this. But they were certainly ready to acknowledge the highest type of filial devotion in those who remained in mourning for at least three years for their deceased parents. During this long period,⁴³ they lived a most secluded life, they retired from public offices if they held

⁴³ In the Confucian Analects, XVII, 21, one of his disciples wants to shorten the mourning period from three years to one. While his argument is very rational, the master refuses to agree with him on a sentimental ground, which, however, seems to be somewhat too far-fetched and is not at all convincing.

any: they did not attend to any commercial transaction; they refrained from participating in any public or private festivals. They remained at home like a prisoner or a religious recluse, fixing all their pious thoughts on the memory of their deceased. This was what was generally endorsed by the followers of Confucianism as a pious expression of filial devotion; and this was what was most strenuously opposed by Mu Ti. (See the Mu Ti, Chapter XXV.)

His objections were on the whole sound and well-grounded. He demonstrated that there was no sense in wasting wealth on such unproductive things as funerals; that such a protracted observation of mourning tended to paralyse the administration of the government and to check the progress of industry and commerce. It is not necessary at all to wrap a corpse in extra clothes, to put it in an extraordinarily strong coffin, and to inter it in an unduly deep grave. All we have to consider in these matters is the practical end which they are intended to serve. Mu Ti was a thorough utilitarian and refused to yield to any sentimental extravagances. He did not disregard the significance of sentiment, he was willing to pay due regard to it, but he could not bear to see the national and individual wealth scattered to the winds for the sake of mere sentimentalism.

It is, therefore, no wonder that Mu Ti was also against music (Chapter XXXII) and vigorously condemned war (Chapters XVII, XVIII, and XIX). In his opinion, music did not add an iota to the national wealth and prosperity; and as to war, it was simply abominable; every trade and industry comes to a standstill, and every sense of justice and righteousness is thereby hopelessly benumbed. At any rate, anything that will disturb the peace of a nation and destroy its productive facilities is mercilessly attacked by Mu Ti.

A fatalistic doctrine which seems to have been prevalent in his days could also not escape his condemnation. According to him, fatalism was a great obstacle in the way of industry and prosperity. If the people were abandoned to the so-called fate which is predetermined and beyond human control, there would be no incentive to urge them to work, produce wealth, and preserve permanent peace. On the other hand, everybody would remain perfectly passive and utterly inactive leaving everything to the pre-established order of things as regulated in the beginning by Unknown Destiny. This state of things could never be suffered to exist in this world of striving. Mu Ti was a strong advocate of the strenuous life and untiring energy. In him we see the practical tendency of the Chinese mind singularly emphasized, though at the expense of their love of formalism and ceremonialism. (See Chapters XXXV, XXXVI, and XXXVII.)

Finally, what is significant in Mu Ti is his conception of *T'ien* which means literally "heaven," but can be freely translated by "God" even in its Christian sense. The difference between the Christian God and Mu Ti's Heaven (*t'ien*) is that while the former made the conception of God foremost and its worship the paramount issue of the religious life, the latter conceded the first place to utilitarianism, for the execution of which the God-idea became necessary to him. It will no doubt be very interesting to consider at length Mu Ti's conception of Heaven in its connection with his doctrine of universal love, which is so closely akin to Christianity. This will be done later on when the religious side of Chinese thought claims our attention.

CEREMONIALISM.

As might be expected, there was a virulent attack upon the ultra-utilitarianism of Mu Ti. The Chinese love of

ceremony and their strong sentiment of ancestor-worship prevented them from giving themselves up to philosophical simplicity or making an unconditional surrender to utilitarianism. This antagonistic spirit found its spokesman in Hsün-tze,⁴⁴ who flourished several decades later than Mencius. He left a work consisting of thirty-three books or chapters. He was not such a brilliant genius as his predecessors such as Mencius or Chwang-tze, but his method of reasoning was singularly sound and systematic for a Chinese. (So far as I know, there exists no English translation of the Hsün-Tze.)

The Confucians of later days treat Hsün-tze as if he were a stepson not properly belonging to the orthodox lineage of Confucianism. This is due to his doctrine of the innate badness of human nature, which he forcibly set forth against the opposite view held by Mencius. Since Han Yü (A. D. 768-824), an eminent scholar and writer of the T'ang dynasty, pronounced Mencius, in place of Hsün-tze, as the transmitter of the orthodox Confucian teachings at the end of the Ante-Ch'in period, Hsün-tze lost his legitimate position and consideration in the eyes of the general public. But from a scholarly point of view, he is entitled to a prominent place in the development of Confucianism, not a whit less than his eloquent predecessor Mencius.

From the historical point of view, what Hsün-tze did for Confucianism was to emphasize its ceremonial side, while Mencius strongly developed its humanistic side. In the Confucian Analects itself, it is sometimes doubtful whether the Master means to give more importance to ceremonialism than to human-heartedness (*jên*). His almost congenital fondness for rituals and ceremonies was so remarkable that it caused his biographers to record that "In his childhood Confucius used to play with the

sacrificial bowls and dishes which he arranged with due formalities." In Book X of the Analects, the reader will notice how carefully and minutely is described the Master's every manner and behavior on different occasions, as if he were the living embodiment of all that was proper in life. The main motive of his interview with Lao-tze was to inquire about ceremonial usages, formally recorded or not, which were kept in the archives of the Chou dynasty, of which Lao-tze was the custodian. And his contemporaries seem to have acknowledged him as authority on matters sacrificial and ceremonial.

Confucius was an ardent advocate of ceremonialism not only in its outward expressions but in its morally edifying effects on character. In the same sense Pascal urged a strict observance of all the church rituals as finally conducing to the development of piety and general Christian disposition. Confucius deplored the universal decline of ceremonial spirit in his days, and did not miss the opportunity to declare his disapproval. If such a powerful, brilliant, and extraordinary person as Mencius failed to come after the Master and proclaim the ethical, subjective, humanitarian side of his doctrine, Hsün-tze, promoter of ceremonialism, would have been recognized as representing the orthodox school of Confucianism.

What was most fatal to the popularity of Hsün-tze was perhaps due to his radical view of human nature, which, in contrast to Mencius, he considered essentially bad, and which, therefore, needed correction through the rules of propriety especially invented for this purpose by the ancient sages.

But, strictly speaking, this unflattering conception of human nature was not of so much importance to Hsün-tze as his ceremonialism. His object was to give a philosophical foundation to his ethics, which he based on the crookedness of humanity which needed rectification. As other

Chinese thinkers, Hsün-tze always kept before his eyes the practical side of his philosophy. His aim was to lead the people to the path of perfect virtue; and to attain it ceremonialism was introduced as the best means. It was not of much consequence, practically considered, whether humanity in its innate constitution was theoretically bad or good; the main thing was to follow the Confucian codes of morality. And in the course of this study, we might say, he incidentally found out that human nature was not good after all as claimed by Mencius; for if it were, he reasoned, why did it need rectifying at all through moral discipline and the rules of propriety?

Says Hsün-tze: "Every one has inborn desires. When these desires are not satisfied, he looks around for the objects [of satisfaction]. When no measure and limits are set to this searching, there necessarily arises quarreling. Quarreling means disturbance, and disturbance obstruction. Wise men of old hated this disturbance; therefore, they established the rules of propriety and justice. They imposed them upon the people. Their desires were thus regulated and their requirements thus furnished. Every desire was not allowed to be satisfied, and every satisfaction to lead to a new one. The equilibrium between them was constantly kept under control. This is the beginning of the proprieties."

From this, it is apparent that Hsün-tze considered society an artificial institution. When men were left to themselves, they fought against one another, for each endeavors to have his own desires satisfied without any regard to his neighbor's. But somehow it occurred in the mind of a wise man that this constant disturbance was not a very desirable state of affairs. The people must be put together in groups, and to insure peace among them some definite checks must be placed on their never-satiated desires. He knew that this procedure was against their

nature, that those checks meant the curbing of their wild desires and impulses, that this was an artificial invention contrary to human nature. Therefore, the holy man, according to Hsün-tze, was no more than a perfected type of artificiality.⁴⁵ The difference between him and the masses of the people was not due to their innate character, but to the artificial refinement that is given to the original raw material.

Here comes the most pronounced difference between Hsün-tze and other Confucians in their practical system of moral discipline. Tze Ssu (grandson of Confucius), Tsêng-tze (one of the Confucian apostles), Mencius, and other principal Confucians show an unanimous tendency to lay more importance on the inner significance of *Jên*, humanism, and *Ching*, reverence, considering the rules of propriety as a natural outward growth of the inner sentiment. But Hsün-tze did not believe in the goodness of human nature and could not rely on its self-cultivation. To use modern terms, he strongly believed in the overwhelming influence of environment in shaping a man's character and destiny. The human mind was not a blank sheet of paper on which anything could be patterned. It was, on the contrary, a very rough substance which needed the most careful handling and systematic remodeling. Rigid rules of propriety artificially laid down by the wise men of old had to be applied on the original raw material, hewing off all its ruggedness, smoothly polishing it up to a required shape.

By this artificial remodeling, the hungry could be persuaded to give precedence to the older, the tired to endure their hardships, brothers to agree in the distribution of their ancestral property, and the people to show due consideration even to strangers. All this excellent behavior is not a spontaneous exhibition of the sentiment as har-

⁴⁵ 積僞而化

bored in the heart of the natural man, but is due to the beautiful influence of ceremonialism.

If other Confucians are to be classified as upholders of subjectivism, Hsün-tze was no doubt a decided proclaimer of objectivism. He did not believe in evolving goodness from within, but in grafting it from without. He did not believe in the cultivation of the altruistic impulse called feeling of fellowship or humaneness (*jên*), but in the muzzling of egotism by some artificial method. When we remember what powerful factors are traditions and the instinct of imitation in the upbuilding of society, it is undeniably true that Hsün-tze's objective method of moral training, however onesided, is conducive in many cases to the making of a high moral character.

Ceremonies, formulas, and rules prescribed by religion or tradition are the natural outward manifestations of some inner sentiments felt by wise and virtuous men of ancient times and sanctioned by all the following generations as elevating and hallowing. When those established rules are reversed in order, and, instead of letting them come from within, are forced upon a human heart from without, it can logically be expected that they will produce in the receiving organ similar sentiments and impulses to those that stirred within ancient men of piety and virtue. The human heart is made of so many susceptible strings, and each of them responds to a certain note. If they are not strong and original enough to vibrate automatically from within, they can be made to act in a definite way by some mechanical means from without. And that is the psychology of ceremonialism.

In one sense the view of the later Confucians who find in Hsün-tze a seed of heterodoxy can be justified, for he opposed the idealistic undercurrent in Confucianism which was very precious to most of its adherents. Says Hsün-tze: "Moral training cannot gain a step by mere retro-

spection; let a man studiously apply himself to [practical] discipline [or study].⁴⁶ The one whole day spent in meditation does not equal in merit to the one minute of [practical] study. We may stand a-tip-toe as high as possible; but it is far better to go up to some height and look round far and wide. Climb up higher and wave your hands; your arms have not gained an inch, but they are seen from afar. Raise your voice in the direction of the wind; it is not necessarily strong, but it can be heard distinctly. Wise men do not differ in their nature from others. What makes them wise is due to their adaptation to environment. Therefore, wise men are particular in choosing their place of dwelling and their associates, for things are grouped according to their congeniality. Let us study all the records bequeathed by our ancient sages and practice them in our daily life. What is the most essential of all things, however, is the study and observance of rules of propriety. This is the consummation of all studies and the culmination of all virtues." As to the study and importance of the canonical books Hsün-tze was in perfect agreement with all the other Confucians. But he considered the book of ceremonies or proprieties to be of special significance. There are, generally speaking, two opposite tendencies in the history of philosophy, one is subjectivism and the other objectivism. In the Chinese history of thought, Hsün-tze represented the latter and strongly emphasized the importance of ceremonial formalities.

It is, therefore, quite in keeping with his general principle that again in opposition to Mu-tze, he laid great emphasis on the importance of music. Mu-tze saw in music its economical unproductiveness only and ignored its soothing and refining effect on the sentiment. Hsün-tze was always

⁴⁶ A similar view was also expressed by Confucius himself in the Analects; for he says: "Once I fasted the whole day and did not sleep the whole night, all the time engaged in thinking. It was of no use, however. Nothing is like study, [that is to say, practical discipline]."

bent on cultivating the character by all possible external means, among which music must be considered one of the most potent. In this respect Hsün-tze certainly voiced one of the sentiments remarkably characteristic of the Chinese. One of the main reasons, however, why they did not favor him so much as Mencius, is, as said before, owing to his peculiar conception concerning the original nature of humanity. Whatever selfish and bestial impulses and thoughts we may betray in our daily intercourse with our fellow-creatures, we are innately inclined not to conceive ourselves as radically base in character. Our fundamental belief, though at first unconscious, is that we are capable as well of absolutely disinterested impulses and thoughts and actions. And our experiences prove that our faith in ourselves, though subjectively formulated at the beginning, stands on some irrefutable objective facts. The Chinese with their highly cultivated common sense naturally shrank from Hsün-tze's conception of human nature, while in other points he was a spokesman of their characteristic sentiments.

Another factor that tends to prejudice Hsün-tze in the eyes of the Chinese public, lies perhaps in his style of writing. What makes a thought acceptable generally, is not always determined by its genuine worth, but in many cases by the manner in which it is presented. For even a worn-out idea becomes agreeably acceptable when it is garbed in a new style. Hsün-tze stands far below Mencius in this respect. His reasoning was unusually powerful and exact and logical as compared with Mencius's, but the form in which his thought was embodied was not so brilliant and eloquent and charmingly attractive as the latter's. It cannot be denied, as we see to-day, that the premises and conclusions of these two great ancient philosophers are defective and onesided and do not cover the entire field; but judging from their rhetorical effects, Mencius appeals

more irresistibly even to the readers of these latter days: and it is no wonder that intellectual Hsün was treated by his compatriots as though he were without the pale of the holy teaching of Confucius, who was the ultimate authority in matters moral as well as religious to the people of the Middle Kingdom.

D. TEITARO SUZUKI.

SOME DANGEROUS TENDENCIES OF MODERN MATERIALISTIC PSYCHOLOGY.

TO one trained under the old spiritistic conception of the universe and man, to whom the world of life and law seems instinct with Supreme Intelligence and man a being with capacity and destiny approaching the Supreme, it is a positive shock and even grief to note the efforts of the modern psychologist to drive God back into Spencer's Unknowable and strip man of all that makes him better than a splendid brute, that leaves him nothing but a bundle of highly developed material nerve re-actions from outward sensations, differentiated from the brute and from all other men only by his individual, peculiar re-actions, whose being is only a "stream of experiences" or "states of consciousness" and whose ego is only some supreme, isolated thought that perceives and masters all the rest.

Memory, his most precious possession, is only the tendency of his nervous organism to reproduce an impression once received with its associated circumstances, of the re-actions of nerve substance to follow the paths cut by preceding sensations. These re-actions are recognized and stored by no inner being but by the nervous organism itself.

Imagination, that delightful faculty to conceive new relations and combinations of old things and fashion them into strange and beautiful forms, is only an enlarged and

freely modified phase of memory, an elastic application of habit to aerial, subterranean and lateral locomotion.

The objective Me, the Self I am conscious of and recognize, is only "an empirical aggregate of things objectively known," i. e., is only an aggregate of all the sensations or re-actions felt in my whole nerve-structure which I recognize, by the "warmth" and "pleasure" with which I greet them, as parts and parcels of myself.

And the subjective I, the Self that feels and knows and dominates the whole being, is only one transcendent thought of thoughts; nay, is not even this, but only the dominant thought, at any given instant, of "a stream of thought, all the past thoughts of which, it, the temporary dominant thought, can recall and recognize as parts of the objective Me"! If this be not thinning out the personality until it have little positive content: what is it?

"It," we are gravely told, "is a thought at each moment different from that of the last thought (or any preceding or present thought) but *appropriative* of the latter together with all that the latter called its own." How very lucid and simple! What can we think of the mind that has such a "state of consciousness" as to postulate such stuff as this?

I am truly a passing, momentary Thought different from all other thoughts and absolutely unattached to the series from which I am singled out! I am not the same Thought for any conceivable instant of time but merely a constantly changing Thought. If I, the Thought, should stop changing for a millionth part of a second, the continuity of existence would be forever broken and I should be no longer I; but a new Thought must single itself out for the dominant one and I be forever another. This may be the rationale of some forms of insanity, the broken thoughts being a broken personality!

Passing thoughts are then the only ego, or "knower"

which the modern natural science of psychology need recognize. So much the worse for psychology—to study a soul without a soul, to start and stop at the unknowable, to explain only so much of soul-phenomena as depend upon the physical organism through and by which they manifest themselves and call it soulogogy is the bigotry of the scientist compared with which the bigotry of the religionist and spiritist is refreshing and satisfying.

I suppose that no intelligent student of philosophy to-day will deny the immense help he has derived from the modern form of the doctrine of development called evolution, but on the contrary will gladly own the great aid it is rendering in explaining much that was formerly obscure. And the investigations of the modern physicist are of incalculable value in revealing the methods of soul manifestation and activity. But to the student of psychology it is sheer suicide to adopt the theory of the extreme school of naturalists, that "we have no need of soul and God as yet, but hope to do without them to the very end."

This may be true as far as physical processes can yet be traced, but they all end at a point where we can go no further without assuming an indwelling intelligence that is more than abstract, ideal Thought however related to matter. And psychology can no more exist without allowing this than we can explain the phenomena of the organized body without assuming life—it will not be psychology.

We have no quarrel with the prevailing school as to its doctrine of the sense origin of our ideas. The age-long, hackneyed disputation over innate ideas does not concern us here. We grant too the truth of their discoveries of the mode of nerve-action and re-action in making up the sum of our knowledge and the localizing of special function in appropriate portions of the brain and ganglia. We admit too the correctness of their deductions, so far as known, as to the behavior of the nerve-organization under stress

of the various phenomena known as perception, memory, imagination, reasoning, emotion etc., but we hold that these are modes of manifestation and not the causation of the real man, the Ego. We hold that the I is something more than a specialized, differentiated product of nerve-action.

And though the Ego is born with and nourished by and develops by means of the nerve-organism, it is yet a thing so apart from and controlling of the organism as to be no passive product of its fortuitous activities, but a personality ruling it. If this were not so, the ego would be the chance production of miscellaneous, accidental, sense-impressions, quite unrelated to its own past expressed in terms of heredity, to its own integrity as an individual or to any tendency to conformity to type. A man thus produced would be a pure freak, an anomaly, an incalculable monstrosity.

In all growths in nature there must be germ, environment and life; but there must be more, else the germ might be a dog or ape or horse or man or a nondescript, as chanced. There is something in the germ that determines this and that something is in matter but as we claim, is not matter. It has never been found to be a characteristic of matter, but is always present in growing organisms and determines the form and uses of the organism through all the stages of its visible life.

It is found that the physical organism which is so intimately associated with mind as to be called the physical basis of mind, is developed from some preexisting germ of nerve matter and does not spring spontaneously from any chance combination of matter. How much mind this germ must contain is expressed by the phrase: "any mind at all," a mere sensitive spot, it may be, on the surface of the lowest form of animal matter. But however slight the starting point there is in it always a something pre-

existing but all controlling, which determines what the future character of the developing organism shall be. And there is sufficient evidence that that something is not a mere attribute of matter; but it is the organizing force or agency that predetermines the essential character of the living being.

But it must preexist and be continually acting throughout the career of the being. To conceive this something as mere abstract thought is unsatisfactory, and to personify this thought, for want of a better symbol, does not help us any. Since its first entry into the visible world (which we do not explain) it has been transmissible by inheritance and only by inheritance.

A study of the phenomena of impregnation and birth impresses upon our reason the necessity for this something with irresistible force.

The earliest and simplest traceable forms of living things is the cell which, bursting under stress, exudes materials to form another similar and close-adherent cell thus building up the organism with all its marvelous capacities and adaptations. But the power to grow is not an attribute of the cell substance but an entirely separate, differing something dwelling within the cell, called nucleus. This nucleus is not, as was formerly supposed, a modification of cell substance but as different from it as the man who dwells within a house is different from the house. And it is endowed with most complex and intelligent activities which control and shape all the changes in the cell. All cells do not contain a nucleus; but all do that have the power of living and reproducing themselves.

This nucleus contains something that is identical with that of the remotest parent stock ages back in time—in the nucleus I possess some of the very substance of the first ancestor of man. And this substance was as perfect in the first man as it is with me, though the cell substance was

much cruder than now and has been developing under the influence of the vitality of the nucleus ever since. It is the intelligent, purposeful domination inherent in the nucleus that does all the selecting, assimilating and developing of the materials that make up the organism and determine what it shall become.

The lowest and the highest forms of living matter are ruled by the same something resident and innate in these nuclei. With the nucleus we reach the ultimate bounds of the visible—here the Unseen begins where all lines of visible activity end, but whence all energy proceeds.

Now in psychology, the nerve organism is built up by the unseen energy, resident in the cell-nuclei to be the organism of manifestation of intelligence, and only on this assumption is it possible to account for the existence of mind. The causation of mental phenomena is as much a psychological question as its mode and machinery of operation; but the natural psychologist does not like to deal with causation since it is not so susceptible of discovery and demonstration as modality.

Modality is visible; causation is invisible. But the uttermost refinement of modality no more reveals causality than the coarsest specimen of crude matter. The cleft between them is unbridgeable now as in the earlier days of philosophical speculation. Natural psychology has contributed nothing to enlighten us as to causality. If this were all, we should have no quarrel with modern psychology; but it does claim to find something that answers its need of a final cause and calls it "streams" or "states of consciousness" all-sufficient in itself to account for the mind and its phenomena.

Does it? Can it? Can a mere habit of a sensitized nerve-system, plus its associated accumulations of sense impressions, account for both the memory and the memorizer? Vast deeps of erudition are stirred up to illustrate

the way in which memory acts; but does that reveal the one who remembers, who stores up the recollections, classifies them, deduces from them new facts and thoughts and fancies, who uses memory as a method and instrument for many purposes beside mere satisfaction of pleasure?

Can any transcendent Thought related or unrelated to any "states of consciousness" of the nerve-system, account for the being and doing of a Man? After all such theorizing is exhausted, do we not still find ourselves before a dead, blank wall where mystery begins and is not helped by chemistry or mechanics? Had the supposed discovery, in Huxley's day, of a diffused mass of pure undifferentiated protoplasm in the deep sea, been true, was there not necessary beside, an external stimulus and shaping force to arouse and guide its evolution into any form of organic unity? Otherwise it would lie there inert, inorganic forever. But there was no such discovery: there has never been found any undifferentiated, organic living matter anywhere. It always contains the stimulus and shaping force dwelling in it but not of it. And this is true of all living matter gray or white or yellow, nerve or muscle or bone.

We attribute the development of type and function in muscle matter to the influence transmitted by the nerves and external stimulus; and in precisely the same way, the development of nerve type and function is dependent upon external stimulus. In both cases, we can discover only the machinery for control. Yet we have no reason for supposing that the controlling force is not the same in each case; for it is invisible in any case—only the machinery is ever visible. Roughly speaking, the nerve-system is like a telegraph system; we see its results and part of its machinery, but the currents that come and go and the sender we cannot see.

To limit the science of psychology to effects and machinery and to ignore the inner currents and the controlling

Personality, is as unfair and unreasonable as to ignore electricity and the operator, in a description of the telegraph.

And what does modern psychology claim to have discovered? Why, merely that nothing comes from within outward, making use of our physical organism to reveal its thoughts and ideals, its hopes and aspirations to make man and the world better than the beast and his jungle. On the contrary, all we can know and feel must come the other way from without inward by means of physical highways. Only sensual impressions of a sensual world can reach us and make us what we are.

The poet, artist, thinker are unnatural, disordered reactions from the impressions of the outer world. The great intellectual idealistic outbursts from Sir Thomas More to Shakespeare, we are told, was the excitement of the nervous system due to the tertiary effects of the epidemic of syphilis! All characteristics not purely animal are disorders of the nervous system.

"Let us eat, drink and be merry; for to-morrow we die." There is no "I" but an abstract thought isolating itself from a "stream of thought" or "states of consciousness" and all our enjoyment is but the "warmth" or "oneness" with which we recognize a familiar sensation. There is no God for us, because he is not known by the senses, and we can know nothing any other way.

This only means that all the ideals of the race, the thoughts of spiritual goodness and hopes of nobler things, of all the past, are false and deceiving, are disorders of health. Mankind has aspired for ages for nothing. Men and women have striven and lived and died for a will-o'-the-wisp and only now have learned their wasteful folly. Let all men know that, as the French physician said: "The farce is played out."

It only means that life for man is a terrible outrage.

To evolve to a point just enough above other brutes to have grand thoughts, to try to become better still, to long for the true and the beautiful in life and destiny, to seek justice and holiness, to yearn for spiritual perfection, to give life freely in the firm hope of immortality, to struggle painfully up to what we are—and then to find that, in the very nature of things, it cannot be—this I say is a cruel joke of Destiny.

A mass of nerve matter in an iron cask, awaiting agitation through the bung-hole; a flask of gases needing only an electric spark to cause re-action and combination, are as capable of original, mental action and the acquisition of personality as the man of modern psychology.

I cannot think: I can only recall or re-create certain former impressions or sensations and recognize, combine, analyze and modify them so that they will cut a new pathway in my nerve-mass, and call this state, this mongrel thing, a process of thought. Any time this same process is repeated, I am said to *remember* my thought. If I am able to cause this process to repeat itself without the aid of any new external sensation, I am said to *imagine*. If it come back unbidden and without effort, I *dream*. And so all the wonderful acts of the mind, all that makes life worth living, all that makes our existence bright and good and beautiful are explained and interpreted—and the hope of man is destroyed.

And thus we make the frightful and astonishing discovery that all the great and beautiful things man has ever written, all Bibles, all literatures are mere drivel. Indeed it is hard to see how it was ever written at all if there is nothing in man but what reached him by his senses, if he is but a bundle of nerve-cells organized by material sensation, if he cannot originate anything, if he may not inspire anything but material effluvium, if he has no mode of communication with spirit or with God.

I myself have all my life been dreaming of the evolution of man into a higher state; let me dream no more. I had hoped that I might aid in raising him a little nearer to the angels, a little further from the source of animal temptation and unholy passion; but I hope no longer. I saw, or thought I saw a coming kingdom of kindness, justice, love, wherein no man however lowly was doomed to sorrow and despair: the vision strangely fades and all I see is now a valley of dry bones whereon no spirit-breath shall ever blow. I had enjoyed to look upon the summer sunset or a copy made by man's outflowing genius; to listen to the blend of thrilling harmonies, the outburst of the glowing soul; to drink in words, like draughts of nectar from human lips impassioned by the life within.

But now I know that I was wrong. My rapture and their inspiration are both disorder of my sense-re-actions, most likely caused by foul disease in me or generations long before.

But I am done. Let Spencer and his followers beware, lest in their zeal to explain the unexplainable, they light the blaze that, seizing on the dry combustible of selfishness with which the sensual heart is filled, may burn to ash the growing grain of love of justice, kindliness, and purity about to flower among the nations of the earth to-day. It is often said that to Helvetius and his philosophy of sensual delight, were due the gross corruption of society and the social upheavals that, since his day, have cursed his fatherland. But his theory was innocent and noble compared with the extreme materialism of our dominant psychology, and in a thousand ways, the latter is more dangerous than his.

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CRITICISMS AND DISCUSSIONS.

LITERARY CORRESPONDENCE.¹

FRANCE.

I am in receipt of a small volume from the pen of Mme. C. Coignet on the evolution of the French Protestantism of the 19th century² and which deserves to be called to the attention of the readers of *The Monist*.

Mme. Coignet briefly expounds the history of Protestantism in France and concludes by expressing her desire for a conciliation, a union between "Christian souls." From the "nationalistic" point of view I would like to make a few reservations on the political attitude of Protestants in the history of our country and on the validity and motives of the Act of Separation of Church and State.

It seems to me that Mme. Coignet does not appreciate the position of the Catholics previous to this law. As opportune as the fact of the separation itself appears to be, we cannot approve entirely of the spirit in which it was made nor the conditions under which it has been applied. It is not at all hard for Protestants to accommodate themselves to it, for it was not directed against them but entirely against the Catholic Church, and the fine speeches of our ministers can deceive no one on this point. I do not at all deny that faults have been committed on the other side; I know indeed that ecclesiastics are not wanting who are deeply distressed by the uncompromising attitude of the Holy See. Unfortunately it is no less undeniable that the Catholics have not been encouraged to rely upon the good faith of their opponents. That they were justified in suspecting them is sufficiently proved by the fact that those in control use acts of reprisal against the believers, and these acts are

¹Translated from the French by Lydia Gillingham Robinson.

²*L'évolution du protestantisme français au XIXe siècle.* Paris: F. Alcan, 1908.

of such a nature that no government should ever descend to their use.

But I shall leave these considerations which are of no great interest to your readers, and I shall come at once to the vital part of the little book which has been the occasion of these remarks.

With regard to the great Christian movement which arose toward the end of the 18th century simultaneously in England, Scandinavia and Holland against religious indifference and formalism, Mme. Coignet pertinently remarks that even though the revival might free the individual religious life from the ecclesiastical yoke, it would nevertheless in the guise of doctrine forge anew the chain which it had broken in the guise of the Church. It would, she says, renew it even more closely, for doctrine is abstract and unchangeable, while the Catholic Church humanized by its representatives always has the power to modify itself.

As a result of the revival in France we can see the vague disagreements of former days taking on a new aspect, the Free Church arrayed at the side of the State Church, and the doctrinal party merging into the ecclesiastical division. Formerly there were three parties in the ranks of Protestantism; traditional orthodoxy separated from the liberals by doctrine, and from the disciples of the revival by the Church idea; the liberals separated from each other by doctrine, but allied to the orthodox by the Church idea; and finally, the disciples of reform united to the orthodox by doctrine, but separated from the two parties of the official Church by the same ecclesiastical idea.

I pass over in silence how the reformed orthodoxy was divided at that time (in 1848 and 1849), and how the Protestants, in order to excommunicate each other, again revived within their midst the Catholic absolutism from which they had suffered so much. I shall not now recall the conflicts engaged in, nor the attempts at union during the course of the last fifty years. It is sufficient to mention here the assembly of October 4, 1906, and the synod of Tuesday, April 9, 1907, which will count as noteworthy events in the history of French Protestantism. In the October meeting they had to decide on the attitude they were to take with regard to the Separation Act which had just been passed, and it seemed well that the different sections of reform should unite at this time on practical ground for the defence of common interests without entering upon it seriously or even intentionally neglecting the weighty problems of institutions and doctrine.

The declaration of October 4 would pass over the dangerous question of dogmas and establish unity "on the unique religious value of the Bible, the document of the progressive revelations of God, and on the personality of Christ to which the Bible bears witness." It accepts and proclaims that "the progressive character of divine revelation leaves an open field to the discoveries of exegesis brought to light by the history of comparative religion." Is not this, many people think, a very strange subterfuge? And is not the attitude of all philosophical minds equally delicate and difficult whether in liberal or orthodox Protestantism or in the ranks of Catholicism?

Indeed, union can never be established among Christian souls except on moral grounds, on the beneficence of the Christian spirit. Such without doubt is the conclusion of Mme. Coignet, to whose generous thought I wish to pay homage.

The churches which admit private judgment differ from the churches of authority in that they substitute individual religious experience for all the tangible forms of faith, institutions, and hierarchy. The gulf between Catholics and reformed denominations is not to be found in the nature of faith, but in the means by which it is transmitted. "I once heard," writes Mme. Coignet, "two Catholic priests of undeniable orthodoxy at the conclusion of a religious interview say to a Protestant: 'You are not in the body of the Church, but you are in its *soul*, and we will meet again in the other world.' Why then may we not come together in this life, respecting the diversity of our religious needs in the diversity of our symbols?"

This is the right note, but will it be heard? I wish so sincerely but do not believe it. In France the Catholics are universally distrustful of Protestants, and the Protestants do not understand that the fall of the Catholic edifice far from helping them will crush them under its ruins. It is generally the case that parties, like vanquished nations, perish not from attacks made upon them but from errors which they themselves commit.

LUCIEN ARRÉAT.

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PHILOSOPHIC TOLERANCE.

A WINTER REVERY.

To-day as I sit before the warm grate fire with the snow-flakes falling outside, I feel in a peculiarly dreamy and charitable mood

towards all mankind, especially philosophers. Perhaps I have what Dooley calls the Carnegie feeling. At any rate there jar upon me more than usually the petty nagging and jostling and rushing to the patent office in the philosophic camp, as though one small head could carry all of truth or as though one expression of truth, however comprehensive, could be more than a passing phase of experience as a whole. Considering the variety of human nature as a result of evolution, why should it not require an indefinite number of systems to express human nature in the various stages of its development and in its various moods? And why are they not all true in so far as they are really genuine and really express human nature then and there? Philosophers, above all people, need open-mindedness and a sense of humor. Dogmatism has erected the stakes and the gibbets for those who have ventured on any new path, while philosophy must always breathe the air of freedom, and has always proved wiser in its hero-worship than in its persecution.

This brings to my mind an occasion in one of the temples of Boston, made more venerable in its associations since then. It was a discussion of educational ideals at a meeting of a brilliant group of educators. It was a Babel of many tongues, one saying: It is this way; another: It is this; one saying: Come to us, we have the latest; another: Come to us, we have the most venerable; another one: Come to us, we have the best equipped bazaar of learning. I remember President Eliot, the aristocratic democrat, the Plato of modern education, rising at the close of the discussion and in his dignified simplicity, gleaning in unadorned eloquence the wisdom of the day. I do not remember his exact words, but the import of them was something like this: "Education is at present in its experimental stage; and in the meantime it is best that each experiment should be carried out with the greatest possible consistency under the best conditions. Harvard has stood for a system of free election in its college course. It is well that a system of required work, under the best conditions, should be tried somewhere, at Princeton perhaps. Thus future generations shall be wiser for our experiments." It struck us all as so eminently sane.

Why is this not true, to an even greater extent, of philosophy, the science of the meaning of it all? Why should we not welcome and encourage different experiments? Is not philosophy, and must it not always be, in the experimental stage? One of the few fragments which have survived from the brilliant author of the *homo mensura* tenet is: "In respect to the gods, I am unable to know

either that they are or that they are not, for there are many obstacles to such knowledge, above all the obscurity of the matter and the life of man in that it is so short." Why should not this brevity of life and the complex and changing character of our world teach us modesty in the ultimate matters, where our little lifetimes and limited point of view must be supplemented by other lifetimes and other points of view, and where the checkered mosaic of truth never can be completed? Truth is at best experimental and nothing can be more fatal than stopping the experiment. The most that will be said of any of us in the ages to come is: Yes, he saw a phase of the problem; or he proved suggestive in the infancy of the science.

I for one, though I have elsewhere urged a *Weltanschauung* of absolute time and realistic pluralism, want to see the experiment of absolute idealism carried out with the best psychological and methodological advantages, and I confess, rabbid realist that I am, that in some moods, in which my passion for permanence and unity asserts itself, I take comfort in absolute idealism, or at least like to play with it. There is a certain intellectual coziness about absolute idealism that I sometimes long for. I want to close the accounts and find how things stand, or at least feel sure that somebody knows and that no evil can befall my ideals. But again, in other, and with me more prevailing moods this esthetic craving gives way to the respect for facts as they seem, to the longing for action and risk; and I sometimes revel, in imagination at least, in the daring and courage of helping to make an unknown future, in which my plans and I myself may prove unfit. A fair field, I say, and no favors, not even for my own pet theories. There are other moods too; and only God knows which is the truest in the end. Ideals may prove truer than facts.

We are told of the Chinese that he has several religions, a different religion for different functions of his life. As a public official and statesman he is a Confucian, this being a religion of ideals for public life. Again, Buddhism supplies the need for ritual and furnishes a larger religious setting, while Taoism, with its forms of magic, satisfies the more primitive folk-lore side of Chinese nature. Beside these there are various local cults. The state recognizes the place these various religions have in Chinese life by supporting them. This condition of things causes no end of trouble to the Western census taker and is very difficult for us sectarian Occidentals to understand. But why should we insist so persistently on fitting human nature into one arbitrary mold for the sake of con-

ventional consistency? Why should we not have recourse to different forms of religion and different systems of philosophy, different universes of appreciation, according to the varying moods and needs of the soul? Why should not institutions, which after all are our creations, be made to serve us, instead of our being enslaved by them?

Here I see the poetic sanity of Plato, which has troubled his stupid and stereotyped commentators so much. The secret of the difficulty of unifying Plato, over which so many have stumbled, is that Plato's philosophy varies with his poetic moods. He, as no other philosopher, coins his own soul; and therefore he has continued to speak to the soul of man as no other philosopher. Each dialogue is a *Weltanschauung* by itself. Most moods seem to fit the overshadowing, large-hearted and sane personality of Socrates, but in other, more abstract moods, the cold personality of Parmenides or Zeno seems more fitting. We have not Plato, but a mosaic of the rich life of Plato. Why should not every sincere man express his life in a philosophy that seems reasonable to him at the time, fits experience now? It is easy enough for the man who deals in mere verbiage to manipulate continually the same identical counters, but not so the man who expresses himself. Thus not only man, but the different moments of man become the measure of all things; and the Sophists, had they been shrewd, might have pointed to the plastic nature of Plato as the best illustration of their theory. Agreement and sameness are practical necessities for the sake of common action, but outside the elementary qualifications for social life are the bane of progress.

In art and poetry conventional limitations have been less effective and made it less difficult for men to be sincere with themselves. We do not demand rigid consistency here. We are disappointed at mere repetition. We look for a different mood of the soul in every new work of the artist. Here human nature has been able to find a more varied and genuine expression for its complex and varying tendencies, and we who enjoy the art find here a varied supplement for our varying inner attitudes. Here it is not a question of either or; there is no need here of finding a common denominator of different types, though silly would-be art lovers will insist on nauseating one with such questions as: What is your favorite painting? your favorite poem? Poor one-horse souls. In the realm of poetry and art we have a right to have our whole nature ministered unto, to live in an infinite number of universes. In one mood we want

lyric sweetness, dreamy romance, Shelley and Keats; in other moods we crave for the searching of tragedy, for something that will appeal to the deeper self within us, and so we ask for the Antigone and Hamlet and Othello. Again we want something that appeals to the heroic, that satisfies the boy within us—and he is always there even in the oldest of us—so we take up Homer. What is the use of taking a vote on the world's greatest poem? The greatest for me is that which expresses my soul most perfectly at the time. Why should I not enthrone each one to an exclusive place in my soul according to my needs, as the ancient Hindu enthroned Indra and Agni and Varuna in turn? There is no poetic Absolute unless it be the freedom of enjoying the varying expressions according to the varying moods.

What is true in poetry is equally true of art in the narrower sense. Why should my admiration for the Sistine Madonna prevent me from enjoying other Madonnas of Raphael, different moods of his soul? And why should my love for Raphael prevent me from loving Millet and Corot? Why should I try to find a common denominator for a Madonna and a Sunset? My soul needs them both; and my love for one does not fill the place of the other, any more than my love for Beethoven's symphonies fills the place of Schubert's songs and Bizet's *Carmen*. To be sectarian here is to have no music in one's soul and to be fit for all the villainous things of which Shakespeare speaks.

And why should a man's soul be crowded into one system of philosophy? The ultimate realities with which metaphysics deals are no less plastic in the hands of the potter than the realities of art. In either case the soul is endeavoring to create an objective counterpart to its tendencies or needs, to mirror itself, become conscious of itself and so to create anew its meaning through the expression of itself. Philosophy like poetry and art, when it is genuine, is only the expression of a mood of the soul, and it is not always for the artist to tell what mood is most significant. Let each one, then, in the moment when he feels the impulse to create, "from his separate star draw the thing as he sees it," not only once but again and again, as he feels the impulse to express himself. Let the soul create its belief-worlds as its own needs demand, wrapping its belief-mantle around itself to make itself cozy in the world, whether to lie down to pleasant dreams or to face a sea of trouble. In the realm of truth, as well as art, man must be the measure, however finite and passing the measure may be. All sincere expression,

therefore, is worth while. History will see to it that the fittest survives. At least he who has expressed himself genuinely, has become repaid by the insight gained in his own expressive act. If human nature in his case is rich and deep, as well as sincere, the expression becomes significant not only for him, but for others as well, a creation of new social values. The expression of human nature, to what extent it is a measure of the universe or not, is always a measure of the individual soul that expresses itself. The reason that philosophy has exercised so small an influence upon the world compared to poetry, art and religion is that it has often been a matter of verbiage, with no real soul back of it. Philosophic meaning, then, like artistic and poetic, is a mosaic of points of view, of belief-worlds, rather than cut out of whole cloth or according to one pattern. Whether we will so or no, our moods and our lives are phases merely of the whole process of reality and our belief-worlds are phases of the total meaning. At best the objective counterpart of our inner attitudes is a very fragmentary expression of what we feel and mean. Hence it is right that philosophy should have its Plato as poetry has its Shakespeare, and philosophy needs its Walt Whitman too, to reduce it to what is elemental and make it sure of its sincerity. "Make thyself new mansions, oh my soul," must be the motto of philosophy. Let the architecture be Greek or Gothic or both, as the soul may require. The history of philosophy is a picture gallery in which we can study not only the history of thought, but the history of ourselves and through sympathy with the past become conscious of our own meaning in our various moods.

To-day, therefore, I feel that I want to be Chinese in my homage to philosophy as I already am in poetry and art. I like to visit sometimes in the company of my friend Royce, a beautiful Greek temple built according to Plato's Idea of the Good. It is wonderfully complete and satisfying, carried out after the plan of one master artist according to perfect mathematical models, frescoed in an infinitely varied pattern, in which the past, present and future are set in wonderful mosaic through the immortal artist's cunning. And withal the soul is filled with such sweet harmony as to forget for the time being its limitations and its longings. You can only gaze in rapture and wonder at the beauty of it all. So impressed was I that I turned to my friend and asked: What can I do? He replied with a smile at my impatience: Only enjoy the eternal beauty of that which is. And it was wonderful for a time to dream there,

while I could keep quiet and until my old restlessness returned. But I fancy I shall sometime steal in again for another quiet hour, to see Hegel gazing at his chart of logical categories, Augustine in mystic devotion and the transfigured countenance of Plato.

But sometimes I like to worship in another temple, very unlike the one just mentioned, bare and simple in the extreme. It is the temple of Democritus and Priestley and other stern and heroic souls. A temple did I say? Yes, for its devotees were filled with a tremendous reverence and enthusiasm. Yet no ornaments were there, nor roof nor walls. Only a pile of rough-hewn rocks in the wilds of the desert, exposed to the storms and snow and sleet in a climate of perpetual winter. For moments the sunshine would break through the grey clouds and make the landscape sparkle into diamonds and crystals of icy grandeur. But those that worshiped there counted it as naught. They watched the wreaths of sand as they rose in many a whirl, or the fall of the snowflakes, and made records of it all. On the altar were two idols, cut out of granite,—Simplicity and Necessity, grim to look at. To them they offered, to my horror, human sacrifices, their own children. But so the idols craved; and many fond hopes, many warm desires, many tender sentiments went up in smoke on the rock-bound altar. As I stayed I became impressed with the absolute democracy of the religion—the democracy of absolute poverty and absolute law—and their willingness to sacrifice all to what seemed to me mere idols.

So impressed was I with the simplicity and sternness and cold awfulness of it that my inner self seemed to shrink within me to a mere ghost of its former puffed-up state. I felt so impressed with the uncompromising, relentlessly democratic character of the forces of the universe and my own insignificance as a finite individual, that when their priests told me that to please their gods I must sacrifice all that I loved, I threw into the fire many of my conceits, many subjective broodings, and many a petty desire—but not all that I loved, and so I could not become a member of the fraternity. But sometime, I dare say, I shall go out again into the wilds, where I can feel the tonic of the north wind and admire again the bleak solemnity of the scene.

But I could not stay there always. I need to get back to the society of Kant and Fichte and Browning and the rest who have felt that circumstance is to some extent plastic in the service of ideals and that we shall not utterly perish, at least not without having our say. The temple where I spend most of my time is an unfinished

Gothic sort of structure, where many artists are at work, each in his own way. I was introduced to the group by a friend of mine, the brilliant and human William James, who spent a lifetime trying to provide a framework and who is now at work on some plans for the interior. It is a place where everybody has something to do. Each one is allowed to choose his own task, make his own plan and fix his own salary. There is no supervision as yet, in fact the plan is that there shall be no supervision of the work as a whole. This is looked at askance by outsiders and mutiny is prophesied. What can be the worth of the work thus pursued? And how can a man be allowed to draw on the universe according to his own estimate? A system of grading has been suggested to ascertain the fitness of plan and work. But so far no available tribunal has been found except the succession of workers themselves and what appeals to them. Each artist is thus his own judge of fitness and when he is superseded there seems to be no guarantee that his work will be carried on. But as the workers are conscious of each others' plans, and as new artists serve apprenticeships under old masters, it is expected that there will be a degree of continuity and unity.

But after all, the center of interest in this religion is not the temple but the artists. The temple may never be finished, as each artist and each generation of artists modify the plans to suit their own ideals. But the artists get practice and the temple is first of all a school for artists. And each artist is paid at least through the joy of the working and the appreciation he feels for such momentary beauty as each can produce.

Here at least the artist has the sense of doing something, for in the other temples there is nothing to do but contemplate that which is, whether beauty or desert. Here worship is work and work is worship. Perhaps somehow, somewhere and sometime his work may mean more than he knows. Perhaps an unseen Artist may be piecing together from moment to moment the scattered fragments of our insight. If the artist gets disheartened, and if his work and fellow workers do not offer sufficient encouragement, with the strenuous Kant working away at the fresco of his dark corner, and young Fichte with untamed enthusiasm trying to boss the job, and the lovable James preaching his favorite principle of pragmatism, and other heroic souls, "each in his own tongue"—if all of these sometimes fail to please and work becomes irksome, let him go into the temple of beauty, in the fairy land of summer, and rest awhile. And if he gets too absorbed in his own plans to be tolerant

of other workers, I should advise him to go out to that lonely rock-bound altar in the wilds, and there learn to sacrifice his subjective conceits and to respect law and order.

JOHN E. BOODIN.

UNIVERSITY OF KANSAS.

EDITORIAL COMMENT.

Pragmatism is the latest philosophical movement which is at present sweeping over the country, and the foregoing article by Professor Boodin may be taken as a typical instance of the philosophic temperament that is at present in the ascendancy. The founder of Pragmatism is Mr. Charles S. Peirce, and its standard bearer, Prof. William James of Harvard. We must confess that we do not share the enthusiasm of the pragmatism movement, and do not join its ranks. We believe that it has its weak points, and it is our intention to publish in the coming number of *The Monist* a critical discussion of pragmatism as a system of philosophy.

MR. SPENCER'S HEDONISM AND KANT'S ETHICS OF DUTY.

One of our contributors, an author and thinker, a man of thought and earnestness though not a specialist in philosophy, writes in a private letter concerning Kant and Spencer as follows:

"I have lately given some thought (though not very exhaustive study) to the contrasting methods of Spencer and his data of ethics, and Kant as unsympathetically presented by Porter. Spencer seems to me to occupy firm ground in his hedonistic position, and Kant to be rather weak in that particular, also in his disregard of the need for some sort of emotional dynamics as an impulse along the track laid by the understanding."

This criticism, it seems to me, represents the general impression which at first sight a comparison of Spencer's theory of ethics with that of Kant will make on readers who approach the subject for the first time. Spencer naturally appeals to the liberal broad-minded public who wish to know the facts of the origin and nature of ethics even though they would exhibit the untenableness of religious doctrines. Kant's treatise appeals to philosophers by profession who are familiar with other attempts and know exactly the problem which Kant intended to solve. Moreover, Spencer is writ-

ten in a modern style in comparison to which Kant appears stilted and metaphysical. Nevertheless the truth remains that Spencer's system of ethics is a flat failure while Kant is sound in all essentials.

In order to be just to Spencer we must understand that he was from the beginning and remained to the very end of his philosophical career a dilettante, a man who displays a great love of the subject which he takes up, but lacks a thorough preparation. Though science and philosophy are nothing but common sense, it would be a mistake to think that a scientist or a philosopher can start his work without taking note of the results accomplished by his predecessors. Mr. Spencer is hampered by his lack of acquaintance with the thoughts of others, having been, in addition, limited in his reading to works written in his mother tongue. Of foreign philosophers he acquired only an imperfect knowledge from poorly made résumés and bad translations. He started his philosophical as well as his ethical theory on the basis of insufficient information as to the prior efforts made in the same line, and so we must not be astonished that he adopts mistaken views which foreign thinkers had discussed and found wanting.

Kant, as he himself states, had very carefully considered the hedonistic solution of ethics, yet he discarded it without even deeming it necessary to enter into an explicit refutation. Perhaps it would have been better if he had done so, but at his time and in his country hedonism could practically be considered obsolete, and so did not need much attention.

Kant did not enter into a detailed discussion of human life or social institutions and their moral significance, but treated the problem of ethics in a general and purely formal way. In doing so he set forth a principle which may be regarded as a philosophical formulation and indeed a justification of the golden rule. He declared the essence of morality to be that we should so act that the maxim of our individual conduct can become the general rule.

In order to explain the situation we must first understand why the average public is naturally inclined to accept hedonism without further investigation as the most plausible theory.

Every one who is not under pressure of some kind, so as to be compelled to act against his inclination, will necessarily follow that phase of conduct which he has decided on. To express it in a tautology, he will do what he wants to do, or in other words, he acts as he pleases. One's "pleasure" and one's "will" are terms that are all but identical in most languages, and thus the principle

that the decisions of our will are simply an expression of our pleasure is deemed a matter of course which would imply that the tendency to procure pleasure and to avoid pain is the natural frame of mind. It seems absurd to think that a man can voluntarily will anything that could give him displeasure.

This conception is, generally speaking, true; but the identification of will and pleasure is not correct, for it happens frequently that there is a great discrepancy between the two. The mind of man, or to speak broadly, of any sentient creature that acts, consists of impulses or motor ideas, and every motor idea has the tendency to act upon the motor nerves. Will is nothing more nor less than the tension between a stimulated motor idea and its actualization in a deed. If a fighting cock espies an antagonist, his fighting propensity will be aroused and he will go for the enemy without any consideration of pleasure or pain, and the same is true of other impulses in man or beast.

A healthy human mind is a very complicated piece of machinery made up of motor impulses that are constantly stimulated but kept under control by being organized at a central station, a kind of headquarters acting as a check, and allowing nothing to pass into action except after a consideration of all the objections of conflicting impulses. This process is called deliberation, and it is natural that in the average man the decision among a number of alternatives will result in a choice of that motor idea which promises pleasure and would avoid pain. But this average type is by no means a universal rule applicable to all cases. If we ask the question whether every man will choose among all the possible courses of action necessarily the one which promises most pleasure, we must answer that there are innumerable cases in which people of an impulsive nature rush thoughtlessly to action frequently with an utter disregard of their own welfare. But in addition there are men who deliberately set aside their pleasure and choose a course of conduct in which they neither shrink from pain nor attempt to procure happiness, allowing themselves to be governed by maxims that are foreign to the large masses of the vulgar and commonplace people. Every man follows the most powerful motor idea which need not be a love of pleasure nor a fear of pain.

There are many thoughtful men who will now and then with deliberation come to the conclusion that the better course does not always result in happiness, and may involve misery and pain. How many people have suffered martyrdom for the sake of their con-

victions, for their religious faith, for truth, and for their ideals, sometimes for noble purposes, but as often also for Utopian vagaries.

It has been claimed that martyrs think of their future happiness in heaven, in comparison with which the suffering of the present life seems trivial, but a closer investigation will show that these calculations are mere assumptions, and that martyrdom is suffered even by those who do not hope for recompense in the beyond. As a glaring example we mention the fate of Giordano Bruno who did not believe in heaven and yet allowed himself to be burned at the stake simply for the sake of remaining faithful to his convictions, though he might have escaped his tragic fate by a few words of recantation. He mounted the fagots firmly and without hesitation preferring a painful death to a surrender of his philosophical principles. In his case, as well as in all others, he acted as he willed, but in his special case his will was not bent on pleasure but on asserting his convictions which were dearer to him than any consideration of pleasure or pain.

It is a question of fact in ethics whether or not man is guided by a desire for pleasure alone, or whether other motives, too, come into play. Hedonists assume as a matter of fact that every man seeks the greatest happiness and avoids pain as much as possible, and we have to answer as a statement of fact that they are mistaken. Further, it is a question of principle, whether or not we should recommend our children to seek pleasure and to shun pain; and it seems to me very unwise to do so, for it would take the backbone out of man's character, if states of feeling became the sole guide of life, and conviction would count for nothing. In either case, whether we deal with the actual facts of conduct or with principles of education, hedonism breaks down when giving so much prominence to a consideration of pleasure and pain.

The next question in order is whether among the motor ideas of the mind there is such a thing as the intention of doing one's duty irrespective of pleasure or pain; and this is not a question of principle but again of fact, and I would answer this also against the commonly established theory of hedonistic ethics in saying that the idea of duty irrelevant of ulterior expectations of either procuring pleasure or avoiding pain is an undeniable factor in the life of man, and in the phenomena of any community, primitive as well as highly civilized. The notion of a common welfare originated naturally in the shape of what is commonly called society, and the

injunctions of parents, educators, teachers, priests, etc., impress upon the mind of the growing child notions of what ought to be done, irrespective of personal considerations. This "ought" is not a mere theory, but a most powerful factor in the development of mankind, and this "ought" upon the whole aims upon the common welfare of the tribe, the commonwealth, the state, the church, the nation, or any social group of which the individual is a member.

The "ought," or the effort to do one's duty, is a motor idea expressive of a common will and establishes the interconnection of individuals who belong to some superpersonal unit that is being formed in the development of mankind. These superpersonal units follow a law of development similar to that of bodily organisms in animal and plant worlds, their organs being vested in the individuals of the community, consisting of the relations among their members and of the ideals with which they are inspired. We may call them institutions; yet, though they are purely formal, not bodily beings, but mere relations among individuals, they are nevertheless real and highly important.

The motives of the tribal or communal "ought" are similar to the corresponding motives of the individual, and so it has been claimed by hedonists that states, nations, churches, and other bodies also follow a tendency to procure pleasure and to avoid pain, which tendency, in the opinion of individualists, can only be as Mr. Spencer actually expresses it, "the greatest happiness of the greatest number of individuals."

However, if we resort here again to a question of fact, we will find that communal motives are not always bent on the greatest possible happiness of the greatest number of individuals in a community, nor even always on the survival of the tribe, the nation, or whatever it may be, but on the preservation of the communal will, which is the ideal of the community or some purpose characteristic of it. The historian has frequently met with events in the development of races in which a tribe or a city or a state prefers extinction to a survival in an unwelcome form. It is not always the happiness of the greatest number, not always the shirking of pain, trials, difficulties, etc., not always, even, the survival of a tribe or state in the struggle for existence that is aimed at, but we find frequent instances of a persistence of the type of a communal will without any regard to happiness or even survival. Thus the citizens of Saguntum did not surrender to the Romans, and refused all offers of peace committing a wholesale suicide rather than to submit to their hated

enemies, or alter the constitution of their communal life. They preferred non-existence under the most trying and terrible circumstances, allowing themselves to burn to death in the flames of their last stronghold to which they applied the torch themselves before the Romans could enter.

Similar incidents happened in different countries, and some of them are still remembered of some Indian tribes of North America, where the communal will was so strongly built upon the preservation of their own way of being, that they acted without any consideration of their own happiness or avoiding pain or disasters.

If any one should doubt that many actions are performed without regard to pleasure or pain, he should think of religious motives which appeal to men as a duty commanded by the supreme power that regulates the destiny of the world. If King Manasseh of Judah had his children pass through the fire of Moloch, or if the King of Moab offered his oldest son and royal heir as a holocaust on the walls of his city, or if Hiel laid the foundation of Jericho in Abiram his first-born, and set up the gates thereof in his youngest son Segub, it was certainly not done for the sake of procuring pleasure or avoiding pain. It was done simply from the sense of duty, because these men were under the impression that their god demanded the sacrifice. Jephthah expected no increase of happiness nor a diminution of pain by the sacrifice of his only daughter, although he may have feared punishment if he did not comply with the divine will. But the story relates that he simply obeyed the behest of the deity because he deemed it his duty, and this motor idea, not checked by any doubt, was strong enough in him to make him act without any consideration of the pleasure and pain of himself or his family, or his tribe.

The principle of hedonism that a consideration of pleasure and pain rules all decisions of the human soul, though at first sight quite plausible, is very superficial, and it is astonishing that a man who devoted so much time to the subject as Mr. Spencer, did not see the fallacy of it.

The question of hedonism is frequently confused with the proposition that man has a natural right to a pursuit of happiness. But a right to the pursuit of happiness has nothing to do with the problem of duty. Man has a right to smoke in the smoking-car, but for that reason we can not say that smoking is a duty. The pursuit of happiness was deemed wrong according to a mediæval conception of the world, which looked upon nature as evil and upon pleasure

as sin. In contrast to the ethics of self-mortification which proposes to suppress the most natural wants of the human heart, both physical and emotional, hedonism rehabilitates the justice of the pursuit of happiness and in this point hedonism is right. But we must not forget that the pursuit of happiness is not a moral obligation nor a duty, but simply a right. Every man has a right to pursue his happiness in his own way—so long as he does not come in conflict with the legitimate interests of others, or in other words, so long as he does not collide with moral obligations. This limitation, however, is overlooked by the hedonist, and he makes of a right a duty. Unchecked pursuit of happiness according to common experience would very soon produce innumerable conflicts, and the science of ethics has been invented to regulate the interrelation of individuals in a community, and the aim of ethics may lead to, but can not be formulated as "the greatest happiness of the greatest number."

Ethics is a question of quality, not of quantity. It is not the greatest number that should decide what should be moral, and what immoral, but the morally best should be taken as authority; and in the history of the world the aim of communal life is not to produce as much pleasure as possible, but to produce higher and better men, and keep the communal life as much as possible pure and undefiled. What mankind needs most is physical, mental and moral health, conservative progress, and an increase in comprehension as well as power, for the sake of leading better, worthier and more intensive lives.

We will not deny that upon the whole this may produce an increase of happiness, but if it does, it is incidental and should not be taken as the criterion; still less as our guide. It is not the standard of measurement but only an accidental result.

Hedonism is practically a denial of the existence of morality. If man always acted in such a way as to follow the bent of his pleasure, and if no other motive could take hold of his soul; if he were incapable of living up to his convictions as soon as they came in conflict with the happiness of himself or of his own, and furthermore, if the idea of duty should have to be superseded by a pursuit of happiness; we should freely state that ethics did not exist, and that there would be no need of its existence, but that man would remain at the mercy of his passions. However, we do not deem the problem of the justification of hedonism an open question, but an unequivocal fallacy. It is a flagrant contradiction of facts and has originated only through the wrong impression that people saw their

right to the pursuit of happiness endangered by the ascetic's bigoted conception of morality.

We must bear in mind that there are two kinds of hedonism,—the hedonism of Bentham, which alone is consistent, and the hedonism of Mr. Spencer, which under the pressure of circumstances makes considerable concessions to its opponents. Bentham is an individualist. According to his theory man follows the bent of his own individual pleasure, and Bentham deems it right that man should do so. Mr. Spencer substitutes for the happiness of the individual, the greatest happiness of the greatest number, and thus introduces a new factor which recognizes the rights of others, and so radically subverts Bentham's individualistic principle without, however, succeeding thereby in justifying the principle of hedonism itself. If we grant that pleasure is and should be the end and aim of all our actions, and at the same time grant the principle of individualism, there is no way to demonstrate why any individual should sacrifice his own pleasure for the sake of others whether or not they be in the majority.

The expression "the greatest happiness of the greatest number" is characteristic of an ethical theory which is in touch with a philosophical interpretation of the world that discards the word and idea "quality" and explains all qualitative difference as due to difference of quantity. We have discussed the problem as to the nature of quality in another article, and it will be sufficient in this connection to refer to our arguments as to why the idea of quality can not be abolished without leading to a confusion which would render all issues unintelligible.* We must recognize that quality is a real feature of the world, and in almost all practical questions the essential thing is quality and not quantity. Unless we understand the significance of quality, we shall either end in mysticism or in agnosticism. Mr. Spencer ended in agnosticism which is a declaration of bankruptcy in philosophy.

If there is anything in this world in which quality is essential and quantity indifferent, it is most assuredly the nature of right and wrong, of good and evil, and of truth and falsehood. No majority vote can establish truth, and no amount of bad eggs can be deemed equal in quality to one good one; and no preference as to the happiness of the greatest number can establish the morality of certain actions.

The acknowledgment of the rights of others to happiness is

* See *The Monist*, Vol. XV, pp. 375 ff.

a concession which Mr. Spencer in the name of hedonism makes to the traditional ethics of duty; it exposes the weakness of hedonism, but it is insufficient to remedy its shortcomings, and serves only as a *reductio ad absurdum*.

Though it is true that immorality will bring misery, the hankering after happiness is like a *fata morgana* which allures people into errors and mistakes of all kinds by the various false hopes which it arouses, and ethics comes to our rescue by giving us a better insight into the nature of conditions, and warning us of the dangers to which a blind pursuit of happiness inevitably leads.

Kant's ethics may be called the ethics of pure reason. He takes his stand on the principle that a man of goodwill will adopt a maxim of conduct which can be made a universal rule, and whatever may be said in criticism of this principle of pure reason introduced into the domain of ethics, we have no lesser endorsement than its application to practical life by the greatest republic in the world, the United States of North America. One most important and fundamental principle of our social and political life consists in the rule that all laws should apply generally, that there should be no exceptions which apply to one class of people alone, and this apparently insignificant little rule of our legislation has proved a most important safeguard against innumerable ills and illegitimate irregularities that otherwise would have crept into public life. We owe more to this little maxim than to any other part of the constitution, however important they may be in their own way. While this is generally acknowledged by lawyers, legislators, and social economists, philosophers have not as yet noted that it is a practical application of Kant's ultimate maxim of ethics. Those who criticize Kant may well consider the important endorsement his code of ethics has received in this way in the American constitution.

We abstain from entering into further details, but will mention one more point raised by our correspondent, who says that Kant shows a disregard to the need for some sort of emotional dynamics. This criticism is worth mentioning, because to a casual reader of Kant's ethics this seems to be a grievous fault of the great philosopher, but we must bear in mind in this connection that Kant did not intend to preach morals but to explain morality, and as Schopenhauer said, "To preach morals is easy, but to explain morality is difficult." It is a miscomprehension of Kant's purpose to say that he lacked emotional dynamics, for in his essay on ethics emotional dynamics has no place, but would only be a disturbing element.

Many a fervid negro preacher may possess more oratorical dynamics when addressing his emotional audience, and he may indeed be more impressive than the philosopher of pure reason, but for that reason I would not quite deem his ethical system superior to Kant's. Kant is not a preacher, but a thinker, and when writing his treatise on the subject he did not intend to work upon the emotions of his readers.

I have discussed the subject because it seems to me that our correspondent represents a large class of the thinking public who have not been able as yet to give a detailed study to the problems of ethics and are naturally carried away by arguments that lie on the surface. For similar reasons the principles of hedonistic ethics are favored by a large majority of liberal, broad-minded and even serious men, and though we are far from deeming that the pursuit of happiness is to be condemned, we are convinced that the errors of hedonism exercise a baneful influence upon the growing generation of the present age.

EDITOR.

MYSTICISM AND SCIENCE.

To the Editor of The Monist.

I have read with interest your article on Mysticism in the last *Monist* and beg to say that I see very little difference in our points of view. It seems to me, if I may say so, that in common with so many others you have regarded mysticism in its abnormal and negative, rather than its normal and positive aspect. It is partly of course a matter of terms. If one identifies mysticism with mystification and individualism and extravagance—and it certainly has these features—he will find little to value in it. But when one gets at the heart of mysticism it seems to me that he finds something that stands for a true appraisal of moral and spiritual truth as above the world of sensation and science. Here again, I find your use of the term "science" far ampler and more inclusive than the common usage. The term itself of course warrants your usage, but can it be made the recognized meaning? Your concluding words upon page 109, which seem to me most admirable, would make a place for what I am contending for as the heart of mysticism under science, but I question if the majority of scientists would endorse them.

I am indebted to you, as no doubt others will be, for the "Cherubinean Wanderer" extracts, as also for the entire discussion.

BERKELEY, CAL.

JOHN WRIGHT BUCKHAM.

QUESTIONS FOR PSYCHICAL RESEARCH.

The American Society for Psychical Research is circulating a request for information with regard to unusual mental experiences of all types. This is issued in the form of a questionnaire, and to be of any value whatever it is very important that as large a number of answers as possible be obtained.

In responding to the questions informants are requested to answer "Yes" or "No" to each question according to the circumstances of their experiences and to write out a detailed account of such as are answered affirmatively. In general, it is well to report experiences as soon as possible after their occurrence, but in any case the day and hour of the incidents should be recorded when known, and all possible details regardless of the points that may most interest the narrator. Pertinent documents are valuable, and it is best to avoid theoretical explanations in the relation of facts.

The Society guarantees that neither names nor facts shall be used in any public manner without permission.

LIST OF QUESTIONS.

1. Have you ever experienced any interesting *Illusions*, visual, auditory, tactual, or other type?
2. Have you ever had any *Hallucinations*, visual, auditory, or other type?
3. Have you ever had any experiences which were evidently mere *chance coincidences*?
4. Have you had any remarkable *dreams*, whether coincidental or otherwise?
5. Have you had any remarkable *visions* or *auditory experiences*, not of the nature of apparitions and not of a coincidental character?
6. Do you know of any *visions* or other interesting experiences of *dying persons*?
7. Have you ever had any *apparitions* of living or deceased persons, whether coincidental or otherwise?
8. Have you ever had any experiences in so-called *clairvoyance* or *clair-audience*, representing really or apparently supernormal knowledge of physical objects, places, or events out of all possible range of normal sense perception?
9. Do you know of any remarkable phenomena associated with or apparently due to hypnotic conditions?
10. Have you ever had any *premonitions*, or experiences really or apparently forecasting future events?
11. Have you ever had any experiences in *thought transference* scientifically called *telepathy*?
12. Have you ever had any unusual experiences under the influence of ether or chloroform?
13. Have you ever had any unusual experiences in connection with the use of narcotics or stimulants, whether taken for medical or other purposes?

14. Have you ever had any personal knowledge of instances of subconscious stimulation of other persons or personalities, in other words cases of alternating personalities, or occasional instances of subconscious mental action of an interesting character?

15. Have you ever had any experience with automatic writing or drawing, the Ouija board, and the Planchette?

16. Have you ever had any experiences with mediums or psychics so called?

17. Have you ever had any experiences in connection with "haunted" houses?

18. Have you ever heard any *raps* or noises which apparently could not be explained by ordinary causes?

19. Have you ever witnessed the movements of objects without apparent physical contact and under circumstances suggesting unknown or unusual causes?

20. Have you ever observed, or had reason to believe, the existence of real or apparent supernormal experiences among animals of any kind?

21. Have you observed or known any phenomena among the blind or the deaf and dumb that were apparently not explained by ordinary causes?

22. Do you know any persons who have had any of the experiences enumerated in the above questions? If so, can you ascertain name and address and also whether we can be permitted to have communication with the same?

Please to address all reports and records to Dr. James H. Hyslop, 519 West 149th St., New York, N. Y.

AN ESPERANTO GRAMMAR.

To the Editor of The Monist:

Notwithstanding the great amount of publicity which has been given to Esperanto, the international language, I find that at this time not more than one-tenth of the people of the United States have even a vague idea of its purpose and scope, and perhaps not one in a hundred has a reasonably definite conception of it. As a sort of counter-irritant to the irresponsible criticism which is occasionally circulated by the uninformed, I have printed for free distribution a second edition of 100,000 copies of a small primer, *Elements of Esperanto*, setting forth the grammar, word-construction and purpose of the language, and will mail a copy to any person who requests it, sending stamp for postage. While you may not be personally interested, there are thousands of your readers to whom this movement for an international auxiliary language, which now covers every country on earth, will appeal as something more than a fad, and they would appreciate your giving space to this letter.

ARTHUR BAKER.

1239 Michigan Avenue, Chicago.

BOOK REVIEWS AND NOTES.

ATHENIAN LEKYTHOI. With outline drawing in glaze varnish on a white ground. By *Arthur Fairbanks*. New York: Macmillan, 1907. Price \$4.00 net.

Arthur Fairbanks, formerly professor at Iowa University, and now director of the Museum of Fine Arts, Boston, Mass., has written a book on the Athenian White Lekythoi, which is published as Volume VI of the Humanistic Series of the University of Michigan Studies. The book is illustrated with a number of specimens which show very well the form of these vases as well as the pictures painted upon them. *Lekythos* means originally a flask, a pitcher, or a bottle, and was so used in Homer, but it was soon applied to a peculiar kind of vase used between 475 and 435 B. C. for funerary purposes in Greece and mainly in Athens.

Professor Fairbanks says: "The typical lekythos shape was attained by the beginning of the fifth century, i. e., before the outline technique became general on this kind of vase, and the changes which appear after this date affect only details. The lekythoi with outline drawing on a white ground are small vases ordinarily from six to twelve inches high, with a high, nearly straight, body on a disk-foot, a slender neck to which is attached the small high handle, and a rather large bell-shaped mouth. The upper two-thirds of the body is covered with a white or whitish slip on which the design is drawn in outline."

Scenes represented on them are either mythological or represent domestic life, or picture visits of relatives to the tomb. Though it is not definitely known it seems to have been for receiving perfume and not to have served any other practical purpose, for some of the necks are not hollowed out and any contents must have been in the bell-shaped mouth of the vessel. Their form is quite elegant and these products of Athenian pottery will accordingly be of interest to both artists and archaeologists.

PRÉCIS RAISONNÉ DE MORALE PRATIQUE PAR QUESTIONS ET RÉPONSES. Par *André Lalande*. Paris: Alcan, 1907. Pp. 70. Price 1 fr.

M. Morlet, superintendent of the Michelet Lyceum at Vanves, is in the habit of presenting at the beginning of each year a number of moral rules to his scholars to which he refers during the year in his punishments as well as rewards. He requested M. André Lalande to compile these in a systematic form into a kind of catechism which appeared first in the Bulletin of the Société Française de Philosophie. It is now published in book form after having had the benefit of criticisms and revision. The intention of the author is to present practical lessons in morality as concisely as possible, and he has

used the usual form of a catechism, covering almost all grounds that need special instruction. The introduction defines morality and morals, consciousness and the idea of happiness. The first part treats of the following subjects: Good Will and Courage, Personality, Intellectual Duty, Justice and Tolerance, Community of Interests, Fraternity, and The Moral Life. The second part is especially devoted to duty towards children and is divided into the following chapters: Special Morality, The Family, Discipline and Instruction, Comrades, Initiative, and the Choice of a Profession. There is no doubt that the book will contain many valuable suggestions to educators.

HELVÉTIUS; SA VIE ET SON OEUVRE. D'après ses ouvrages des écrits divers et des documents inédits. Par *Albert Keim*. Paris: Alcan, 1907. Pp. 716. Price 10 fr.

Helvetius, in spite of his shortcomings, was one of the most remarkable figures of the close of the eighteenth century, and he will continue a most influential thinker for all future ages. From whatever standpoint we may consider his significance, whether as a psychologist, moralist, epicurean, poet, economist or one of the encyclopedists, he was in all these various efforts of his literary labors, a man of practical life aiming at a social reformation. With all his fervor he loved the ideas of the new civilization which are now being more and more actualized in the living present, and he deserves a calm and just appreciation of his comprehensive work. This has been undertaken by Dr. Albert Keim, who had at his disposal a number of curious editorial documents, and he has done his work with patience and calm impartiality.

Dr. Keim has analysed bit by bit in the present voluminous work the thoughts of a man whose utilitarian doctrine has exercised an incontestable influence upon statesmen, philosophers and writers of his age down to the present time, and this influence is not at all confined to France but has been felt almost equally in other countries. The present work will undoubtedly remain classical in its way and will be of value to all historians and philosophers.

L'ORIENTAZIONE PSICOLOGICA DELL' ETICA E DELLA FILOSOFIA DEL DIRITTO. Da *Alessandro Bonucci*. Perugia: Bartelli, 1907. Pp. 378. Price, 7 l. 50.

Prof. Alessandro Bonucci in his *L'orientazione psicologica* investigates the relation of ethics, philosophy and jurisprudence to psychology, devoting a large space to moral valuation. Upon the juridical facts as they exist in man's social relation he builds up his civil and penal law.

NOTES DE LA MAIN D'HELVETIUS. Publiées d'après un manuscrit inédit avec une introduction et des commentaires par *Albert Keim*. Paris: Alcan, 1907. Pp. 116.

The work of Helvetius, one of the leading French naturalists of the eighteenth century, are well known to all students of philosophy. They have exercised a powerful influence on the development of modern thought, and with all their shortcomings belong to the most important philosophical books, but it is little known that Helvetius left a kind of diary in manuscript which contains all kinds of notes, essays, inquiries, interesting and profound maxims,

worthy of the best that has been written by moralists and sages of all ages, and Albert Keim has undertaken the work of publishing them with an introduction and all explanations necessary to understand the conditions under which they were printed.

BOOKS RECEIVED.

Life and Letters of George Jacob Holyoake. By Joseph McCabe. London: Watts, 1907. Pp. 355. Price 16s. net (\$5 net).—Poems and Translations. By Frederic Rowland Marvin. Troy, N. Y.: Pafraets, 1907. Pp. xiii, 164.—Spinozas theologisch-politischer Traktat. Uebertragen und eingeleitet von Carl Gebhardt. Leipsic: Dürr, 1908. Pp. xxxiv, 423. Price 5 m. 40.—Untersuchungen zur Sinnespsychologie. Von Franz Brentano. Leipsic: Duncker & Humblot, 1907. Pp. 161. Price 4 m. 20.—The Sanity of Art. By Bernard Shaw. New York: Benj. R. Tucker, 1907. Pp. 113. Price 75 c. Paper 30 c.—Anarchism. By Dr. Paul Eltzbacher, Tr. by S. T. Byington. New York: Tucker, 1908. Pp. 309. Price \$1.50.—Lectures on Humanism. By J. S. Mackenzie. London: Sonnenschein, 1907. Pp. 243. Price 4s. 6d.—The Kingdom of Love. By Henry Frank. New York: Fenno. Pp. 245. Price \$1.00.—Die Weltanschauung Spinozas. Von Alfred Wenzel. Leipsic: Engelmann, 1907. Pp. 478. Price 9 m.—Philosophie et philosophes. Par Arthur Schopenhauer. Paris: Alcan, 1907. Pp. 207. Price 2 fr. 50.—La Notion de vérité dans la "philosophie nouvelle." Par J. de Tonquédec. Paris: Gabriel Beauchesne & Cie., 1908. Pp. 149. Price 1 fr. 50.—Le Philosophie Meh-Ti et l'idée de solidarité. Par Alexandra David. London: Luzac, 1907. Pp. 185. Price 2 fr.—Christianity and Modern Culture. By Charles Gray Shaw. Cincinnati: Jennings & Graham. Pp. 310. Price \$1.25 net.—Contrasts in Social Progress. By Edward Payson Tenney, A. M. New York: Longmans, Green & Co., 1907. Pp. xvi, 415. Price, \$2.50 net.—Primitive Secret Societies. A Study in Early Politics and Religion. By Hutton Webster, Ph.D. New York: Macmillan, 1908. Pp. xii, 227. Price \$2.00 net.—Die Wiedergeburt der Philosophie. Von Carl Stumpf. Leipsic: J. A. Barth, 1908. Pp. 38. Price 1 m.—Philosophie der Werte. Von Hugo Münsterberg. Leipsic: Barth, 1908. Pp. 486. Price 10 m. Boards 11 m.—The Ancient History of China to the End of the Chou Dynasty. By Friedrich Hirth, Ph.D. New York: Columbia Univ. Press, (Macmillan), 1908. Pp. xiii, 383. Price \$2.50 net.—Degrees of Life in Man (Swedenborgian). By O. L. Barler. Chicago: Regan, 1907.—The Inward Light. By H. Fielding Hall, (Author of "The Soul of a People"). New York: Macmillan, 1908. Pp. 228. Price \$1.75.—Modern Classical Philosophers. Selections compiled by Benjamin Rand, Ph.D. Boston: Houghton, Mifflin & Co., 1908. Pp. 740. Price \$2.50 net.—The Riddle of Personality. By H. Addington Bruce. New York: Moffat, Yard & Co., 1908. Pp. xiii, 246. Price \$1.50 net.—Hints Toward a Theory of Ethics. By Theo. B. Stork. Philadelphia: Lutheran Publication Society.—Interpretation of the Bible. By George Holley Gilbert. New York: Macmillan, 1908. Pp. 309. Price, \$1.25.—The Formation of the New Testament. By George Hooper Ferris. Philadelphia: Griffith & Rowland Press, 1907. Pp. 280. Price 90 c. net.—The Discovery of the of the Soul. By Floyd B. Wilson. New York: R. F. Fenno & Co., 1908. Pp. 247. Price \$1.00.

